

Assessment date: 20 March 2015

<i>Lablab purpureus (Dolichos lablab)-Hyacinth Bean</i>		Answer	Score
1.01	Is the species highly domesticated?	n	0
1.02	Has the species become naturalised where grown?		
1.03	Does the species have weedy races?		
2.01	Species suited to FL climates (USDA hardiness zones; 0-low, 1-intermediate, 2-high)	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)	y	1
2.04	Native or naturalized in regions with an average of 11-60 inches of annual precipitation	y	1
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	y	2
3.02	Garden/amenity/disturbance weed	?	
3.03	Weed of agriculture	unk	
3.04	Environmental weed	n	0
3.05	Congeneric weed	n	0
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	n	0
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	n	-1
4.05	Toxic to animals	n	0
4.06	Host for recognised pests and pathogens	y	1
4.07	Causes allergies or is otherwise toxic to humans	y	1
4.08	Creates a fire hazard in natural ecosystems	n	0
4.09	Is a shade tolerant plant at some stage of its life cycle	n	0
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	y	1
4.11	Climbing or smothering growth habit	y	1
4.12	Forms dense thickets	n	0
5.01	Aquatic	n	0
5.02	Grass	n	0
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte	n	0
6.01	Evidence of substantial reproductive failure in native habitat	n	0
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally	n	-1
6.04	Self-compatible or apomictic	y	1
6.05	Requires specialist pollinators	n	0

6.06	Reproduction by vegetative propagation	n	-1
6.07	Minimum generative time (years)	1	1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y	1
7.02	Propagules dispersed intentionally by people	y	1
7.03	Propagules likely to disperse as a produce contaminant	n	-1
7.04	Propagules adapted to wind dispersal	n	-1
7.05	Propagules water dispersed	n	-1
7.06	Propagules bird dispersed	n	-1
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)	n	-1
8.01	Prolific seed production	n	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	n	-1
8.03	Well controlled by herbicides		
8.04	Tolerates, or benefits from, mutilation or cultivation	y	1
8.05	Effective natural enemies present in U.S.		
Total Score		3	
Implemented Pacific Second Screening		Yes	
Risk Assessment Results		EVAL	

section	# questions answered	satisfy minimum?
A		9 yes
B		11 yes
C		22 yes
total		42 yes

	Reference	Source data
1.01		No evidence that cultivation has led to new traits.
1.02		
1.03		
2.01	1. PERAL NAPPFAST Global Plant Hardiness (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgnd.tif). 2. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (00 Month 0000).	No computer analysis was performed. 1. Global hardiness zone: 9, 10, 11, 12, 13; equivalent to USDA Hardiness zones: USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11a: to USDA Zone (40 °F) USDA Zone 11b: to (45 °F) USDA Zone 12a: to (50 °F) USDA Zone 12b: to (55 °F). 2. Native to AFRICA Northeast Tropical Africa: Chad; Ethiopia; Sudan East Tropical Africa: Kenya; Tanzania; Uganda, West-Central Tropical Africa: Cameroon; Gabon; Rwanda, West Tropical Africa: Cote D'Ivoire; Ghana; Niger; Nigeria; Senegal; Sierra Leone; Togo, South Tropical Africa: Angola; Malawi; Mozambique; Zambia; Zimbabwe, Southern Africa: Botswana; Namibia; South Africa - Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, North West, Western Cape; Swaziland, Western Indian Ocean: Madagascar.
2.02		No computer analysis was performed. Native range is well known; refer to 2.01 source data.
2.03	No computer analysis was performed. Native range is well known; refer to 2.01 source data.	1. Distribution in the native/cultivated range occurs in Am, Aw, Af, BWk, BWh, BSh, Csb, Cfb, Cfa, Cwb, Cwa
2.04	World Bank http://sdwebx.worldbank.org/climateportal/index.cfm?page=country_historical_climate&ThisRegion=Africa&ThisCCode=ZAF (2-10-2015)	Many areas over the species distribution across Africa and Madagascar have an average yearly precipitation within 11 to 60in
2.05	1. Encyclopedia of Life http://eol.org/pages/644742/overview (2-10-2015) 2. Missouri Botanical Garden http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a114 (2-10-2015)	1. A legume that apparently originated in Africa and has long been cultivated in India 1b. Hyacinth Bean is planted extensively in pastures in northern Australia. 2. In St. Louis, it is grown as an annual vine.
3.01	1. Oviedo Prieto R, Herrera Oliver P, Caluff MG, et al., 2012. National list of invasive and potentially invasive plants in the Republic of Cuba - 2011. (Lista nacional de especies de plantas invasoras y potencialmente invasoras en la República de Cuba - 2011.) Bissea: Boletín sobre Conservación de Plantas del Jardín Botánico Nacional de Cuba, 6(Special Issue 1):22-96. 2. Invasive Species Compendium http://www.cabi.org/isc/datasheet/30003 (2-10-2015) 3. Groves, R. H., F. D. Panetta, and John Garry Virtue. Weed Risk Assessment. Collingwood: CSRIO, 2001. p. 156 Print.	1. Listed as an invasive plant in Cuba. 2. It is naturalized and cultivated in the tropics and subtropics, particularly in India, South-East Asia, Egypt and the Sudan. 3. Naturalized in the Galapagos Islands.
3.02	1. Grassland Index http://www.fao.org/ag/agp/AGPC/doc/Gbase/data/pf000047.htm (2-13-2015) 2. USDA Plant Guide http://plants.usda.gov/plantguide/pdf/pg_lapu6.pdf (2-13-2015) 3. Valenzuela, H., and J. Smith. 2002. Sustainable agriculture green manure crops. SA-GM-7. Cooperative Extension Service, College of Tropical Agric. and Human Resources, Univ. of Hawaii at Manoa. http://www.ctahr.hawaii.edu/oc/freepubs/pdf/GreenManureCrops/lablab.pdf (2-13-2015) 4. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Lablab_purpureus.htm (2-11-2015)	1. L. purpureus is a weak perennial and is not likely to spread. 2. In some cases, the climbing variety of L. purpureus has shown some invasive tendencies in old fields. 3. Avoid selecting climbing varieties of lablab in neglected fields, as they tend to be invasive and can outcompete native species. In on-farm evaluations of several legume species for use as "living mulch" conducted in Haiku, Maui, the use of climbing lablab varieties was considered undesirable. 4. Weed Potential: None due to its short-lived nature and poor longevity of seed.

3.03	1. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Lablab_purpureus.htm (2-11-2015)	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.
3.04		no evidence
3.05		no evidence
4.01	Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i, 2 vols. University of Hawaii Press, Bishop Museum, Honolulu.	These features are not listed in the species description.
4.02		no evidence
4.03		no evidence
4.04	1. R. Hendricksen and D. J. Minson (1980). The feed intake and grazing behaviour of cattle grazing a crop of Lablab purpureus cv. Rongai. The Journal of Agricultural Science, 95, pp 547-554. doi:10.1017/S0021859600087955. 2. Andrea M Murphy and Pablo E Colucci, A tropical forage solution to poor quality ruminant diets: A review of Lablab purpureus, University of Guelph, Canada, 17 March 1999	1. The plant was readily eaten by cattle in large quantities. 2. Being palatable to livestock, it is an adequate source of much needed protein and can be utilised in several different ways
4.05		No evidence found, however unlikely as the plant is well documented in this assessment to have been used a fodder and grazing material.
4.06	1. Andrea M Murphy and Pablo E Colucci, A tropical forage solution to poor quality ruminant diets: A review of Lablab purpureus, University of Guelph, Canada, 17 March 1999 2. Missouri Botanical Garden http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=248820&isprofile=1&basic=hyacinth%20bean (2-11-2015) 3. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Lablab_purpureus.htm (2-11-2015)	1. In fact, in several areas of the world, lablab is virtually free of pests and diseases (Luck 1965). In Honduras, evidence of moderate to severe insect (<i>Diabrotica</i> spp.) attack has been observed with severe attacks corresponding to dry conditions. Notwithstanding, trials have shown lablab is resistant to the insects, continuing to grow vigorously in their presence (Flores 1993). 2. No serious insect or disease problems though it is fed on by Japanese beetles, which can make the leaves resemble Swiss cheese. 3. The pod -boring insect <i>Adisura atkinsoni</i> can reduce seed yields but has been controlled experimentally by strain HB-III of <i>Bacterium cereus</i> var. <i>thuringensis</i> . Other insect pests include <i>Heliothis armigera</i> , <i>Exelastis atomosa</i> and <i>Maruca testulalis</i> . Bruchid beetles (<i>Callosobruchus</i> spp.) damage seed during growth and storage. Lablab roots are attacked by several nematodes: <i>Helicotylenchus dihystra</i> , <i>Meloidogyne hapla</i> and <i>M. incognita</i> . Anthracnose (caused by <i>Colletotrichum lindemuthianum</i>), leaf-spot (caused by <i>Cercospora dolichi</i>) and powdery mildew (caused by <i>Leveillula taurica</i> var. <i>macrospora</i>) have been reported. A stem rot caused by <i>Sclerotinia sclerotiorum</i> may attack the plant under wet conditions.
4.07	1. Plants for a Future http://www.pfaf.org/user/Plant.aspx?LatinName=Lablab+purpureus (2-10-2015) 2. NC State Cooperative Extension http://plants.ces.ncsu.edu/plants/all/dolichos-lablab-lablab-purpureus/ (2-10-2015) 3. Missouri Botanical Garden http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=248820&isprofile=1&basic=hyacinth%20bean (2-11-2015)	1. The raw seed is poisonous. 2. If not boiled Pods and seeds will cause twitching, stupor, convulsions, and labored breathing if eaten. 3. Mature, dried seeds are toxic due to high levels of cyanogenic glucosides and should be boiled in two changes of water before eating to remove the toxins.
4.08		no evidence

4.09	1. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Lablab_purpureus.htm (2-11-2015) 2. Missouri Botanical Garden http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=248820&isprofile=1&basic=hyacinth%20bean (2-11-2015) 3. Daves Garden http://davesgarden.com/guides/pf/go/890/#b (2-10-2015)	1. Intolerant of moderate to heavy shading 2. SUN: Full sun to part shade. 3. . Sun Exposure: Full Sun
4.10	1. Cornell University http://www.gardening.cornell.edu/homegardening/sceneba33.html (2-11-2015) 2. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Lablab_purpureus.htm (2-11-2015)	1. requires well-drained soil 2. Grows in a wide range of soils from deep sands to heavy clays, provided drainage is good, and from pH 4.5-7.5
4.11	1. Cornell University http://www.gardening.cornell.edu/homegardening/sceneba33.html (2-11-2015) 2. Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i, 2 vols. University of Hawaii Press, Bishop Museum, Honolulu. 3. USDA Plant Guide http://plants.usda.gov/plantguide/pdf/pg_lapu6.pdf (2-13-2015)	1. growing quickly to form dense screens 2. Climbing or creeping creeping perenial herbs. 3. L. purpureus is an herbaceous, climbing, warm- season annual or short-lived perennial with a vigorous taproot.
4.12	Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i, 2 vols. University of Hawaii Press, Bishop Museum, Honolulu.	No evidence of thicket forming. Given species description, it is unlikely.
5.01		Family: Fabaceae
5.02		Family: Fabaceae
5.03	Floridata http://www.floridata.com/ref/D/doli_lab.cfm (2-11-2015)	Family: Fabaceae 1. Lablab bean is an excellent nitrogen fixer... In frostfree areas the vine becomes woody and can reach more than 30 ft (9 m) in length. In zones 9 and colder, the vine remains herbaceous and rarely exceeds 10 ft (3 m). [The plant is therefore only semi-woody, and is not considered a "nitrogen fixing woody plant"]
5.04	Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i, 2 vols. University of Hawaii Press, Bishop Museum, Honolulu.	Such features are not listed in the species description.
6.01		no evidence
6.02	1. College of Tropical Agriculture and Human Resources. Updated 6 January, 2013 http://www.ctahr.hawaii.edu/sustainag/cc-gm/lablab.html 2. Plants for a Future http://www.pfaf.org/user/Plant.aspx?LatinName=Lablab+purpureus (2-11-2015)	1. The seeds can remain viable for 2-3 years with an 85-95% germination rate. 2. Propagated by seeds.
6.03		no evidence of hybridization in an otherwise well studied species. [No evidence of hybridization in the genus].
6.04	1. USDA Plant Guide http://plants.usda.gov/plantguide/pdf/pg_lapu6.pdf (2-13-2015) 2. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Lablab_purpureus.htm (2-11-2015)	1. It is mainly self- fertilizing, and will set seed within the first year after planting. 2. Known to have some outcrossing but observations suggest that this is usually minimal.
6.05		no evidence
6.06		no evidence of establishment by means other than seed

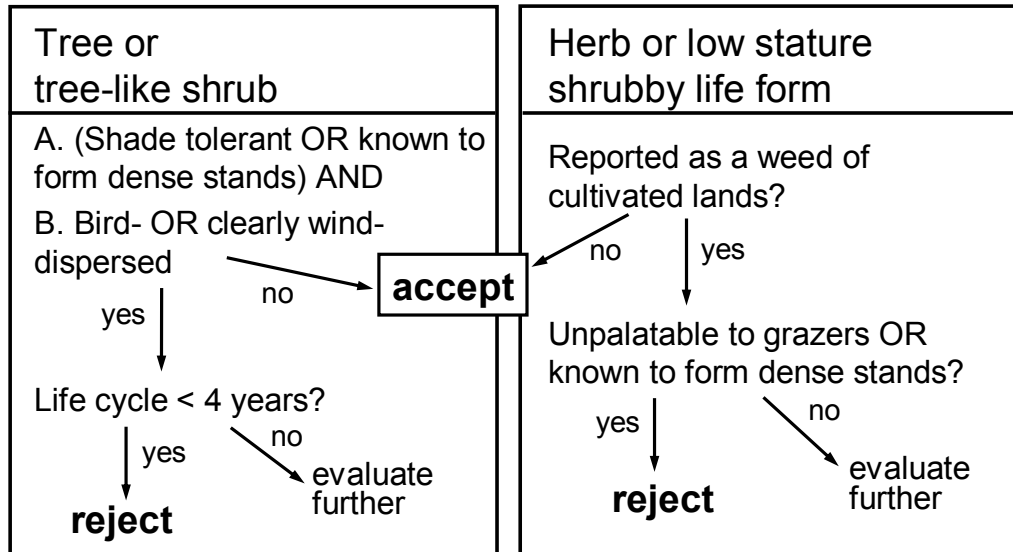
6.07	1. Floridata http://www.floridata.com/ref/D/doli_lab.cfm (2-11-2015) 2. USDA Plant Guide http://plants.usda.gov/plantguide/pdf/pg_lapu6.pdf (2-13-2015) 2. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Lablab_purpureus.htm (2-11-2015)	1. Lablab beans take 90-150 days from sowing to maturity.... Hardiness: Lablab bean is a short lived perennial in frostfree regions. It is grown as an annual elsewhere. 1b. Being an annual or weak perennial, lablab flowers and sets seed in the first season of growth. 2. It is mainly self-fertilizing, and will set seed within the first year after planting.
7.01	1. Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i, 2 vols. University of Hawaii Press, Bishop Museum, Honolulu. 2. Encyclopedia of Life http://eol.org/pages/644742/overview (2-10-2015)	naturalized in dry to mesic, disturbed areas such as along roadsides and trails abandoned homesides. 2. Distribution: In disturbed areas, such as along roadsides, on fences, and in pastures.
7.02	1. Floridata http://www.floridata.com/ref/D/doli_lab.cfm (2-11-2015) 2. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Lablab_purpureus.htm (2-11-2015)	1. In the United States, lablab bean usually is grown as an ornamental. 2. It is traditionally grown as a pulse crop for human consumption in south and southeast Asia and eastern Africa. Flowers and immature pods also used as a vegetable. It is also used as a fodder legume sown for grazing and conservation in broad-acre agricultural systems in tropical environments with a summer rainfall. Also used as green manure, cover crop and in cut-and-carry systems and as a concentrate feed. It can be incorporated into cereal cropping systems as a legume ley to address soil fertility decline and is used as an intercrop species with maize to provide better legume/stover feed quality. As a dual purpose (human food and animal feed) legume, it is sown as a monoculture or in intercrop systems.
7.03		no evidence
7.04	Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i, 2 vols. University of Hawaii Press, Bishop Museum, Honolulu.	no evidence. Given the seeds are lodged in weighted pods, it is unlikely wind is a mechanism for dispersal.
7.05	Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i, 2 vols. University of Hawaii Press, Bishop Museum, Honolulu.	no evidence, plant description does not appear conducive to water dispersal.
7.06		no evidence
7.07	Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i, 2 vols. University of Hawaii Press, Bishop Museum, Honolulu.	The description of the species does not display any characteristics which indicate attachment.
7.08		no evidence
8.01	Grassland Index http://www.fao.org/ag/agp/AGPC/doc/Gbase/data/pf000047.htm (2-13-2015)	Up to 1 000 kg./ha in Brazil and Bolivia. Davies and Hutton (1970) give an average figure of 500 kg./ha
8.02		This species is known to employ epigeal germination and no evidence was found indicating a persistent seed bank.
8.03	1. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Lablab_purpureus.htm (2-11-2015)	1. Lablab is highly sensitive to 2,4-D, M.C.P.A., 2,4-D-B and dicamba. [However, no documented evidence of effective control programs outside of academic or agricultural study]
8.04	1. Sudeep Kumar (2010): Influence of nipping and hormonal spray on seed yield and quality in field bean [Lablab purpureus (L.) sweet] genotypes. 2. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Lablab_purpureus.htm (2-11-2015)	1. Nipping of plants at 55 DAS lead to decrease in plant height but increased the number of branches, pods per plant (125.72), seeds per pod (4.87), seed yield per hectare (2166 kg). Similarly, seed quality parameters such as hundred seed weight (28.61g), germination percentage (92.45%) and vigour index (3979) were significantly higher with nipped plants (N2) compared to no nipped plants (N1) 2. Will not establish readily into existing pastures without some form of soil disturbance.

8.05	University of Agricultural Sciences GKVK, Bangalore http://www.lablalab.org/html/insects-management.html (2-13-2015)	Many natural enemies are listed, but is unclear what the nature of these are in the US and the degree of damage to the plant they would cause here.
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Lablab purpureus

Pacific second screening: decision rules for species with WRA scores between 1 and 6

(from Daehler *et al.* 2004)



Vines must pass both tests

This species passes the tree side of the SS.

Data on weed of cultivated lands indicates it is reported as a weed in cropped lands, but not enough data for a conclusive answer. Therefore the results of the SS is 'Evaluate'