Canavalia ensiformis

Fabaceae

Jack Bean, Horse Bean, Habichuela Espada, Gotani Bean, wonder bean

Description

Canavalia ensiformis is native to the West Indies and Central America. It closely resembles Sword Bean, *C. gladiata*, and the predominantly African wild species, *C. virosa*. *C. ensiformis* is widely distributed in the tropics and subtropics although it is regarded as a minor vegetable rather than a major crop species.

Uses

C. ensiformis is succeeding as a green manure cover crop plant because its deep root system can find water during drought, its nitrogen fixation capabilities improve soil nutrients, and it can be intercropped with bananas, cacao, cassava, citrus, coconut, coffee, maize, pineapple, sweet potatoes, and tobacco. It can serve as supplementary food for ruminants (cud-chewing animals), though it should be introduced gradually as a small percentage of the total diet because of toxins. Some Asian cultures eat the young green pods and seeds but only after thorough cooking.

Cultivation

- **Elevation –** up to 1800 m
- **Rainfall –** 600-2000 mm
- **Soil Types –** tolerates a wide range of soil fertility, pH (pH 5-6 preferred), and salinity
- **Temperature Range –** moderately high over long growing season
- **Day Length Sensitivity –** short days encourage bush-form growth, long days produce vine-form growth (up to 2 m tall); flowers as days shorten

If grown as a green manure, the seeds are broadcast. If grown as a food crop, seeds should be planted 2-3 cm deep, 30-45 cm apart, in rows 60-90 cm apart.

Harvesting and Seed Production

C. ensiformis thrives in warm, humid environments with a long growing season. Immature pods may be harvested 90-120 days after planting. Mature seeds may be harvested 180-300 days after planting by cutting the whole plant when the pods are brown and dry. The thick seed coat resists burrowing insects during storage.

Pests and Diseases

C. ensiformis is relatively free of pests and diseases. Root rot, stem-borers and leaf-eating beetles pose problems in different stages of growth.

Cooking and Nutrition

Leaves, tender shoots, pods, and seeds may all be eaten but they should be very young, and must always be thoroughly cooked (with cooking liquid discarded). Mature seeds, sometimes eaten as “famine food,” are not flavorful, have a mealy texture, and require hours of soaking (submerged in water or kept moist until sprouted) and boiling in water to soften and purge of harmful toxins. They are however a nutritious source of protein and carbohydrates. The tough seed coat, that comprises 13% of seed weight, should be removed after soaking or cooking. *C. ensiformis* seeds can be roasted and used as a coffee substitute. In Indonesia, steamed flowers and leaves are used as flavorings.

References

Ecocrop. 1993-2007. *Vigna radiata*. Food and Agriculture Organization, Rome, Italy. ecocrop.fao.org/ecocrop/srv/en/dataSheet?id=609 (http://ecocrop.fao.org/ecocrop/srv/en/dataSheet?id=609). Accessed 18 June 2019.

Heuzé V., Tran G., 2015. Jack bean (*Canavalia ensiformis*). Feedipedia, a programme by INRA, CIRAD, AFZ and FAO. https://www.feedipedia.org/node/327 (https://www.feedipedia.org/node/327) Last updated on September 7, 2015

PROTA4U. *Canavalia ensiformis* (L.). [Internet] Record from PROTA4U. Brink, M. & Belay, G. (Editors). PROTA (Plant Resources of Tropical Africa / Ressources végétales de l’Afrique tropicale), Wageningen, Netherlands. http://www.prota4u.org/search.asp. Accessed 18 June 2019.

Sheahan, C.M. 2012. Plant guide for jack bean (*Canavalia ensiformis*). USDA-Natural Resources Conservation Service, Cape May Plant Materials Center, Cape May, NJ.