

POTENTIAL OF *CANAVALIA GLADIATA* AND *CANAVALIA ENSIFORMIS* POD AS VEGETABLES

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Pods of Sword bean (*Canavalia gladiata* (Jacq.) DC.) and Jack bean (*C. ensiformis* (L.) DC.) (*Awara* in Sinhala) are under-exploited legume vegetables that could be inexpensive sources of protein (4.6 %) with high fiber (2.6 %), high minerals (calcium 33 mg, phosphorus 66 mg and iron 1.2 mg per 100 g), low fat (0.4 %) and ability to lower the serum cholesterol (Sridhar and Seena, 2006). The nutritive value of the pods increases with maturity (Bosch, 2004) but mature seeds are toxic and must not be consumed unless they are extensively cooked. They are grown as homegarden vegetables in Sri Lanka but not in large scale commercial cultivation. Young green pods, young foliage and immature seeds of these species are consumed as a cooked vegetable in Asia including Sri Lanka. Young pods can be harvested at 4-6 months after planting. Pods become fibrous and the palatability reduces with maturity and thus, laborious preparation is required to inactivate or reduce the anti-nutritional factors/toxicity of mature seeds (Ekanayake *et al.*, 1999, Vadivel *et al.*, 2010).

Plants of *C. gladiata* (variety: *gladiata* and '*alba*') and *C. ensiformis* were grown as a homegarden crop for three consecutive growing seasons to explore the potential of immature pods as a vegetable. Seeds were planted about one meter apart, alongside the fences. Direct seeding was practiced and rapid germination was observed where nursery management was not required. Cow dung and compost were used as manure. Relative resistance to insect pests and diseases was observed and hence, chemical application of pesticides was not required.

It took 3-5 months for the first inflorescence to appear after seeding. More than half of the flowers in an inflorescence did not give pods due to abscission of flowers. Flowers of an inflorescence did not bloom simultaneously and therefore, pods as well as flowers in different growth stages could be seen in an inflorescence. The average immature pod yield was 0.9- 4.2 kg per plant during the first year. The 15-25 cm long and 2-5 months old pods were soft.

As a vegetable, protein content of the immature pods is higher than that of most of the other vegetables. The fiber content is also higher or similar to that of many other vegetables. The daily fruit and vegetable consumption in Sri Lanka is about 150 g, where the WHO recommendation is at least 400 g per person per day. The vegetable prices in Sri Lanka fluctuate often and to meet the demand, a year

round production of vegetables is needed. Therefore, immature pods of *C. gladiata* and *C. ensiformis* have the potential to be used as a vegetable.

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REFERENCES

- Bosch, C.H. 2004. *Canavalia gladiata* (Jacq) DC. Record from protabase, Eds. G.J.H. Grubben and O.A. Denton. Plant Resources of Tropical Africa, Netherlands. <http://database.prota.org/search.htm> (Accessed on 13th May 2012)
- Ekanayake, S., Jansz, E.R. and Nair, B.M. 1999. Proximate composition, mineral and amino acid content of mature *Canavalia gladiata* seeds. Food Chemistry 66: 115-119.
- Sridhar, K.R. and Seenaa, S. 2006. Nutritional and antinutritional significance of four unconventional legumes of the genus *Canavalia* - A comparative study. Food Chemistry 99: 267-288
- Vadivel, V., Doss, A. and Pugalenti, M. 2010. Evaluation of nutritional value and protein quality of raw and differentially processed sword bean [*Canavalia gladiata* (jacq.) Dc.] Seeds. African Journal of Food, Agriculture, Nutrition and Development 10: 2850-2865.