

CHANGES IN NUTRIENT COMPOSITION OF WINGED BEAN PODS
(Psophocarpus tetragonolobus L. DC) DURING DEVELOPMENT

By

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Thesis

Submitted in partial fulfilment of the requirements

for the degree of

MASTER OF PHILOSOPHY

in the

POSTGRADUATE INSTITUTE OF AGRICULTURE

of the

UNIVERSITY OF PERADENIYA

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July 1986.

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A B S T R A C T

The changes in physical characteristics, some nutrient composition and consumer acceptability of the pods of three cultivars of winged bean, namely SLS-1, SLS-6 (Sri Lankan Selections) and UPS-99 (University of Papua New Guinea) were studied during their development (up to 60 days after flowering).

The pods were analysed for proximate composition, mineral contents, trypsin inhibitor activity, nitrogen dispersibility, total soluble carbohydrates, amino acids and electrophoretic pattern of their protein components.

The pods attained their maximum length around 30 days after flowering and thereafter the length decreased. The pod width was maximum at 30 and 37 days after flowering in UPS-99 and in Sri Lankan Selections, respectively.

The total protein content of winged bean pods increased during the development and the values ranged from 13.0% to 27.0%. The crude fibre content also increased during the development, with greater accumulation of fibre between days 15 to 37 after flowering. The crude fat content increased up to 30 and 37 days after flowering in UPS-99 and in Sri Lankan Selections respectively and thereafter decreased. The ash content decreased during the development and the values ranged from 2.15% to 7.61%.

Mineral analysis on the developing pods showed the presence of large amounts of calcium, magnesium, potassium and phosphorous in comparison to the seeds of winged bean. Zinc was present at low levels of 4.64 to 6.63 mg/100g.

As the pods developed, free amino acid contents decreased ranging from 60.34 to 6.25 mg/g. The chromatograms of the winged bean pods were to a large extent characterized and dominated by α and δ amino butyric acids, and valine was the predominant essential amino acid.

The molecular weights of subunit polypeptides of winged bean pod proteins ranged from 14,400 to 94,000 in electrophoretograms of polyacrylamide gel electrophoresis. The apparent molecular weights of major subunits of whole pod proteins were 75,000, 28,000 and 20,000.

A sensory evaluation of pickled winged bean pods showed that the pods harvested at 30 days after flowering were the best for pickling on the basis of general appearance, taste, crispiness, flavour and overall acceptability.

Based on the data on nutritional content and sensory evaluation, the winged bean pods of around 30 days maturity were found to be the most desirable for human consumption.

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