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Notes on the History of the Winged Bean  
in Papua New Guinea

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NOTES ON THE HISTORY OF THE WINGED BEAN IN PAPUA NEW GUINEA

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The winged bean (Psophocarpus tetragonolobus (L.)DC.) is a leguminous plant which produces edible pods, seeds, leaves, flowers, and tubers. It is believed to have originated in Africa because no species of the genus Psophocarpus have been found growing wild in any other continent. It is possible that Arab or Portuguese traders carried the winged bean to Papua New Guinea across the Indian Ocean for its cultivation has been reported in many places from the Mascarene Islands to the Indonesian archipelago more than a century ago (Burkill, 1906). The earliest record of Psophocarpus tetragonolobus was by the Dutch natural historian Rumphius, who lived at Ambon in the South Moluccas from 1653 - 1702 (Rumphius, 1747). He believed that the plant (whose pods and tubers were being used as food) had been introduced only recently to the island, probably from Java. It seems that Rumphius himself was unsure of its origin. He reports that it carried the Malay-Javanese name 'botor' which means 'a glandular swelling' 'such as one may see through looking at the compartments into which the seeds lie inside the pod' (sic). But he then states that 'botor' is a word derived from the Arabic 'batr' meaning 'lobe'. This suggests that the Arabs were the first people who introduced the crop to the region. But there seems to be little conclusive linguistic evidence to support the hypothesis that the Arabs were the only distributors of the winged bean in Asia. The names for the winged bean in other regions where its cultivation

is practised seem to lack a common linguistic root. They are either traditional or their meaning refers either to the pod shape (e.g. 'four cornered bean' or 'bean like the five-angle-fruit, Averrhoa carambola), or to the place presumably from which it was introduced (e.g. Goa bean, Mauritius bean, Colombo). (Claydon, submitted for publication).

It is not certain how long the winged bean has been cultivated in Papua New Guinea because the first botanical explorations date back only to the second half of the last century (Miklouho-Maclay 1885, Krieger, 1899). There are some places of indirect evidence which point to a longer history of cultivation and usage of the crop in certain areas of Papua New Guinea.

It has recently been found that an unusually high number of distinct varieties of winged bean exist in the New Guinea Highlands and in the Sepik provinces. The plant might have been introduced on the north coast of New Guinea by sea traders from the Indonesian archipelago, and it may have spread to the Highlands along the neolithic trade routes which followed the valleys of large rivers like the Sepik and Ramu. Khan (1976) suggests that the extensive genetic variation found in winged beans in the Highlands may have evolved through mutation, which is a very lengthy process. Highlands agriculture is believed to date back more than 6000 years and it is probable that crops such as the sweet potato reached the Highlands long before the era of Portuguese trading.

As well as a large number of different varieties, there is also a considerable number of different names of the winged bean in Papua New Guinea. However, from the data which has been collected so far, it seems possible that these names and presumably the winged bean either could have arisen from the same source or were transferred from tribe to tribe. (Dutton, pers.comm.). There are probably two classes of root-word for the winged bean: those

sounding traditional and the others, more recently derived. An example of the first group is magu (Abelam - East Sepik), which is related to mogar (Bongu - Maclay Coast), moi (Mawan - Madang) and me (-umali (Le-Madang). It is conceivable that the words almong (Medlpa - W. Highlands), alyongo (Wapenamanda - Enga) and ome (-lle) Gumine - Chimbu) are derived from the Sepik/Madang root. The second group which includes bi-(sug) (E. Fuyuge - Central Province) and pempem (Kiriwina - Trobriand Islands) has a more modern flavour, as the names appear to be derived from the word 'bean' (or, in German, 'Bohne'). It is likely, then, that the winged bean was introduced to these areas, up to 80 or 90 years ago, by government or missionary workers.

At the present time it is possible to see the winged bean grown and consumed as a seasonal crop in most of Papua New Guinea, from the West Sepik through to the North Solomons with the possible exception of the Western and Gulf provinces. There has been a distribution of seed from areas of long established cultivation to areas where there has been little or no cultivation. This can be seen especially in the Port Moresby area into which there has recently been considerable migration in highlanders, who are noted for their technique of rapidly setting up gardens on underdeveloped land. Another instance of more recent distribution of winged beans is through contracted workers in lowland plantations, especially in New Britain. However, though the level of consumption of the winged bean may seem to be increasing, in some areas its popularity might well be waning. The problems here may be competition with other, more recently introduced, legumes, especially as the winged bean requires a comparatively high labour input (for example, staking and continuous harvesting), and a gradual decrease in vigour of local winged bean varieties through interbreeding, pests and disease. Strathern (1976) states that

although the winged bean still has ritual significance and enjoys much popularity in the Mount Hagen area of the Western Highlands, its usage and cultivation seems to be declining in the Pangia sub-province in the Southern Highlands, perhaps due to a decline in the overall importance of subsistence gardening. A reason for the decline in consumption of winged beans in one area of New Ireland visited by the author was given that the entire crop of beans was destroyed by the giant snails introduced by the Japanese during World War II.

In the last few years a group of workers in the University of Papua New Guinea and the Department of Primary Industry have been working to encourage consumption of the winged bean as a valuable food and to lessen the problems associated with its cultivation. Local and exotic varieties of seed are currently being selected on criteria such as high yield and quality, and suitable varieties are now being distributed not only throughout Papua New Guinea, but to many other countries of the world.

#### REFERENCES

- BURKILL, I.H. (1906). 'Goa beans in India'. Agricultural Ledger, 4, 51.
- KHAN, T.N. (1976). Papua New Guinea: a centre of genetic diversity in winged bean (Psophocarpus tetragonolobus (L.)DC.). Euphytica, 25(3), 693-706.
- KRIEGER, M. (1899). 'Neu-Guinea'. Berlin, Alfred Schall, page 65.
- MIKLOUHO-MACLAY, N. (1885). 'List of plants in use by the natives of the Maclay-coast New Guinea'. Proceedings of the Linnean Society of New South Wales, 10(3), 346-54. (see also Appendix by Baron Ferdinand von Mueller, *ibid*, p.358).
- RUMPHIUS, G.E. (1747). 'Lobus quadrangularis Botor' in Herbarium Amboinense Amsterdam., Vol. 5, book 9, ch. 21, p. 374.

STRATHERN, A. (1976). 'Some notes on the cultivation of winged beans in two highlands areas of Papua New Guinea'. Science in New Guinea, 4(3), 145-151.