



Vanilla in the South Pacific

Kenneth M. Menz and Euan M. Fleming

Vanilla is a crop that is generating interest among agricultural policy-makers in South Pacific countries who are keen to encourage the production of speciality crops for which they can find a niche in export markets.

Vanilla fulfills many of the attributes needed of a speciality export crop. It is adaptable to environmental conditions in many South Pacific countries, is relatively free of pests and diseases, and is quite easy for smallholders to grow. There are also associated value adding processes in curing the vanilla beans, requiring relatively low capital investment and simple technology. The crop is storable and fairly resistant to damage during transport and handling. Further, its value to weight ratio is high. Finally, there has been a healthy and stable world market for vanilla beans in recent years.

Introduction

Vanilla is the world's second most expensive spice by weight (after saffron). It is a product of vanilla beans, grown mainly in island countries of the developing world, but processed and consumed almost totally within the developed world. Artificial vanilla is usually made from lignite (the glue that holds wood fibres together), a by-product of pulp and paper manufacture. It is substantially cheaper than natural vanilla and is produced in large industrial plants in North America and Europe. There is a dearth of recent economic information on the production and marketing of

vanilla.¹ The plant genus *Vanilla* is in the orchid family, but very few orchid species have fruits with an aromatic flavour. The most important two are *Vanilla fragrens* (also called *Vanilla planifolia*) which originated in Mexico, and *Vanilla tahitensis*, from Tahiti. The Tahitian species is regarded as producing a rather lower-quality aroma. A unique production characteristic of vanilla is the requirement for hand pollination. A practical method of hand pollination was not discovered until 1841, and that method is still in use today.²

Artificial vanilla represents about 95 per cent of the total world vanilla market. Of the 5 per cent natural vanilla, approximately one-half is consumed in the United States. The primary use of vanilla is as an edible flavouring in industrially-produced items such as ice cream and in domestic cooking. The main flavouring ingredient is vanillin ($C_8H_8O_3$) which, as noted, can be manufactured artificially. The higher quality of real vanilla results from subsidiary substances in the vanilla bean. Free vanillin is not present in the beans at harvest, but is produced during curing by enzyme action on glucosides.³

World supply of vanilla is dominated by a cartel (Univanille) of the major producers — Madagascar, Réunion and Comoros Islands. These three Indian Ocean nations supply approximately three-quarters of the world's vanilla. Of the three, Madagascar is the most important producer, having regained traditional production levels after significant falls in 1979 and 1980. Prices of vanilla beans are

1 A notable exception is the following publication: N. Anand and A.E. Smith, *The Market for Vanilla*, London, Tropical Development and Research Institute, 1986.

2 J.W. Purseglove, *Tropical Crops: Monocotyledous*, London, Longman, 1972.

3 Purseglove, *op. cit.*

currently around US\$70 per kilogram, and have been stable since 1980, principally due to the operations of Univanille.

South Pacific vanilla bean production is insignificant on the world scale. Production increases in Tonga (the major South Pacific producer) or elsewhere in the South Pacific are not likely to affect world prices. However, possible substantial increases in production by the Indian Ocean island countries is a potential impediment to the expansion of the vanilla industry in the South Pacific.

World imports

The major market for vanilla as noted earlier is the United States, which traditionally imports approximately 850 tonnes of dried vanilla beans per year (over one-half total world imports and approximately equal to the average annual production of the major producer, Madagascar). In the US, most vanilla beans are processed into essence by a handful of commercial firms, prior to final consumption. However, in the two major European consuming countries, France and West Germany, the primary demand by households is for whole beans. The three major consuming countries, France, West Germany and the US, have been averaging over 80 per cent of total world imports of 1550 tonnes over the past five years.

The variability in world import levels is thought to reflect changing supply/stockpiling patterns rather than annual changes in consumption levels. The latter would be expected to be fairly constant, especially in the light of relatively constant world prices prevailing in the 1980s.

Consumption

Artificial vanilla comprised 96 per cent of the total US vanilla market in 1985. Industry sources claim that there has been an average increase of approximately 10 per cent in US real vanilla consumption in recent years although this is not revealed in the available trade statistics. The increase in real vanilla consumption is a consequence of increased high quality ice cream sales — rising by 30 per cent per year (cf. 4 per cent for all ice cream). Ice

cream accounts for 44 per cent of the natural vanilla used in the US.⁴

With the US consuming one-half to two-thirds of the world's vanilla, and with ice cream accounting for approximately one-half of US consumption, developments in the US ice cream market are clearly critical to natural vanilla demand. These effects are magnified by the US market's leadership role in international ice cream consumption trends. The trend towards natural ice cream, using natural vanilla, appears to be world-wide. Despite the approximately ten-fold price differential between natural and artificial vanilla, this differential represents only a tiny proportion of the final retail price of ice cream (around one per cent). These figures would suggest that demand for vanilla is price inelastic, a notion supported by Chadwick et al.⁵ and also by the huge world price increases in the late 1970s resulting from low supplies.

World production/exports

Vanilla production statistics are not readily available. Annual exports for the major producing countries are available. Madagascar's annual exports have typically been in the region of 1000 tonnes, while the Comoros Islands exports about 200 tonnes per annum. The smallest partner in the Univanille cartel is Réunion, which is a relatively insignificant exporter at around 20 tonnes. Production is sensitive to climate; major crop losses have occurred, for example, as a result of cyclones as in 1976. There have been consistent reports of development schemes for the Madagascar vanilla industry, but these have not been reflected in rising exports.⁶

Indonesian exports were around 400 tonnes in 1978 and reached that level again in 1986. However, in intervening years they have been around 100-200 tonnes per annum. Indonesian beans are of a lower quality 'Java' type, typically trading at around a price discounted by 20 per cent or more compared to the 'Bourbon' type produced by the Univanille countries. South Pacific countries (except Tahiti) produce the Bourbon type bean.

4 J. Valentine, 'Natural vanilla in comeback over Pirates of Enhance', *Wall Street Journal*, 13 September 1987.

5 M.G.A. Chadwick, E. Orr and R. Rope, 'The market for Vanilla beans', *Tropical Science*, 3, 1961, pp.174-83.

6 Chadwick et al., *op. cit.*; I.M. Roberts, World market prospects for vanilla, with particular reference to prospects for expanded production in Tonga. Unpublished report prepared by the Bureau of Agricultural Economics for the Australian Development Assistance Bureau, Canberra, 1980.

Apart from Tonga, there are some minor producers in the South Pacific. These include Tahiti and Fiji. Production conditions are suitable for vanilla growing in Vanuatu. Tahiti ranked with Madagascar as a dominant producer prior to 1930. Tahitian producers subsequently turned to plantation-style crops such as coffee and sugar-cane, and vanilla production plummeted. A viral problem may have also contributed to the demise of the Tahitian industry. The Fiji vanilla industry is in its infancy, with a production target of 111 kilograms of cured beans in 1988.⁷ However, growing interest in the crop, together with institutional support, is likely to lead to substantial growth in the industry in the next four years.

Substantial crop damage in Madagascar occurred in a 1976 cyclone. To replenish US stocks in 1977, and to a lesser extent in 1978, US importers took large supplies from Madagascar in those two years. By 1979, Madagascan stocks and exports had declined to low levels. To encourage stock replenishment, prices paid to the 70,000 growers in Madagascar were raised over the period 1978-82; this trend in price rises is reported to have continued. In a similar vein, a small crop in 1986 in Madagascar may have prompted buying by the US. Export taxes in Madagascar are high, with producers receiving in the order of one-fifth of the world price.⁸ A lowering of these taxes was partly responsible for the large crop in 1987.

There is substantial potential for increasing Madagascan production if the government chooses to give a greater share of the export price to producers, rather than take the revenue in taxes. Clearly the potential for increased production is large given the gap between world and producer prices and the low Madagascan yields of 150 kilograms per hectare indicated by an unpublished International Bank for Reconstruction and Development manuscript. The effect of a domestic price increase in Madagascar on production and, hence, world vanilla prices is unclear. If the world demand for natural vanilla is price inelastic, it will not be in Madagascar's interest to encourage production increases through price rises; Madagascan farmers would however, gain by a tax reduction.

Prices

Prices for vanilla beans rose gradually in nominal terms from about US\$12 for ten years following the formation of Univanille in 1968, roughly keeping pace with US inflation. There was a five-fold increase in prices in 1979-80 as a result of low supplies from Madagascar, lending support to the notion of inelasticity in world demand. Subsequently during the 1980s, nominal prices have been stable at around US\$70 per kilogram (Table 1).

Table 1 Vanilla beans: early March spot prices in New York

	US\$/kg (nominal)	US\$/kg (1980 prices)	Tongan Pa'anga/kg*
1970	12.2	25.9	10.9
1971	12.4	25.2	11.0
1972	12.4	24.2	10.4
1973	14.7	27.3	10.5
1974	15.1	25.2	10.5
1975	17.6	26.9	13.4
1976	20.3	29.4	16.6
1977	20.3	27.6	18.3
1978	22.9	28.9	20.1
1979	62.2	70.6	51.8
1980	132.0	132.0	115.8
1981	68.2	61.7	59.3
1982	61.6	52.5	60.4
1983	67.1	61.5	74.5
1984	68.7	54.5	78.1
1985	81.4	62.3	116.3
1986	78.1	58.6	116.5
1987	77.6	56.1	109.7
1988	77.0	n.a.	n.a.

*Derived from previous column by converting at the nominal currency exchange rates prevailing in the particular year.

Source: USDA, *U.S. Spice Trade*, Washington, USDA Foreign Agricultural Service, various years.

In real (compared with US inflation) terms, prices in the 1980s have been approximately double those in the 1970s (excluding the abnormally high 1979 and 1980 prices). Price rises of this magnitude, while assisting the profitability of vanilla-growing substantially, carry with them the danger of attracting increased world production to the point where the additional supply would cause substantial reductions in prices.

7 Fiji Ministry of Primary Industries, Work Programme 1988, Suva, 1988.

8 Anon., 'The spice of Malagasy life', *The Economist*, 31 October 1987, p.60.

Implications of world vanilla market for South Pacific producers

Tonga grows *Vanilla planifolia*, which is the same higher quality species as is grown in the major Indian Ocean island producer countries. The general management and curing processing are now regarded as being of high standard although there have been some conflicting reports of this. In terms of type and quality, it appears that Tongan vanilla is similar to the bulk of vanilla traded on world markets, although this remains to be verified.

The South Pacific is a relatively insignificant producer in the world vanilla market, producing approximately one-half of one per cent of the total world figure, and hence is a price-taker in world markets. Tongan export statistics are shown in Table 2. South Pacific countries are not members of Univanille, but clearly they are able to profit from any price increases achieved by Univanille. Since Tongan-produced vanilla is of the Bourbon type grown by Univanille producers, Tongan vanilla is directly competitive on the major world markets. Tongan vanilla producers have received similar prices to that received by Univanille producers.

Because of the general decline in the value of the Tongan pa'anga relative to the US dollar, vanilla prices in Tongan pa'anga have risen more dramatically than prices in the US since 1982 (Table 1). Any feasible increases in production from Tonga alone will not cause a measurable drop in world vanilla prices.

The world natural vanilla market is characterized by climatically-induced supply variability and a relatively stable, but slowly expanding, demand. The cartel has successfully stabilized world prices since 1980 in the face of this situation. Stock levels in producing countries have historically equalled, or exceeded, one year's annual consumption. There is an indication that a low production year encourages stock-holding in consumer countries. A poor production year in Madagascar in 1986 pushed stocks to relatively low levels, but the subsequent Madagascan crop was expected to be high. It is likely that Tongan producers could withstand moderate falls in the price of vanilla, since at current prices, the profit margin is considerable.⁹

There are five major criteria that can be used to assess the value of an export crop to smallholders in geographically-dispersed countries such as the South Pacific islands. These are:

- adaptability and ease of production, with an absence of any major pests and diseases;
- simple value adding processing activities requiring relatively low capital investment and simple technology;
- storability of the processed commodity, and resistance to damage during handling and transportation;
- high value-weight ratio; and
- sound world market prospects.

Vanilla admirably fulfills the first four essentially physical criteria and, as demonstrated above, the commodity has fetched high prices in a buoyant world market since 1979.¹⁰ The suitability of vanilla growing for the South Pacific is manifested in the growth of the industry in Tonga, although this growth is somewhat obscured by available statistics (Table 2).

Table 2 Vanilla exports from Tonga (dried bean)

	Tonnes
1975	1.2
1976	4.1
1977	10.8
1978	8.2
1979	1.9
1980	5.0
1981	4.8
1982	11.6
1983	8.8
1984	13.2
1985	4.1
1986	18.0
1987	11.6

Source: Tongan Department of Statistics (modified by the authors).

The growth of the vanilla industry in the South Pacific demonstrates that there are good opportunities to introduce successfully new cash crops into existing smallholder agricultural systems. It would be useful for agricul-

9 K.M. Menz and E. Fleming, *Economic Prospects for Vanilla in the South Pacific*, Canberra, Australian Centre for International Agricultural Research, 1989.

10 A detailed discussion of these factors appears in Menz and Fleming, *op. cit.*

tural planners to establish a registry of potential export crops, and categorize them according to the production, processing and marketing criteria outlined in this paper. Existing research in agriculture tends to work from the viewpoint of whether the crop or livestock can be successfully grown in a particular agrobiological environment. While this is obviously the most important initial test of a successful export enterprise, it is by no means sufficient. The simultaneous assessment of other criteria is needed. The enduring role of copra as a cash crop, in remote areas of South Pacific island countries, is due to factors other than its profitability relative to alternative cash crops. It shares with vanilla some of the attractive attributes outlined at the beginning of this paper, albeit to a lesser extent. Other advantages include the multiple end uses of products from the coconut palm, especially use of the coconut for food and drink in the village.

There is another feature which points to the need for caution in the further development of the vanilla industry in remote areas: coconut's history of neglect. Vanilla is a crop that is an intensive user of labour on a regular basis, with yields likely to suffer through neglect of plantation upkeep. The extension role is there-

fore likely to remain important — more important than in the case of copra production. It is also going to be important for policy-makers to monitor labour availability in these remote regions with the possible need for policy intervention to help prevent the drift of labour to more accessible rural and urban regions. Another issue is the desirability of mixed cropping of vanilla and coconuts. The latter can be a complement to the former in terms of labour use.

A related point concerns the potential effect of low prices on maintenance efforts in vanilla plantations. Tongan vanilla producers have not encountered a prolonged period of depressed prices. There is anecdotal evidence that producers have tended to neglect maintenance of their coconut plantations in such market conditions. Effects of similar actions in vanilla plantations are likely to be much more dramatic, as mentioned above.

Based on the information which could be obtained, the market outlook for South Pacific vanilla producers is optimistic, albeit more guarded than that of Cornell,¹¹ who concluded that 'there will doubtless always be a market for all first quality beans which may ever be grown' (p.347).

11 D.S. Cornell, 'Vanilla — its botany, history, cultivation and economic import', *Economic Botany* 7, 1953, pp.291-358.