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Strategic issues and research and development priorities in sustaining the Vanuatu coconut industry

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Abstract

This paper focuses on the strategic issues and priorities currently identified for achieving the sustainability of the Vanuatu coconut industry, and how research and development (R&D) should be targeted. Following a brief history of Vanuatu's coconut industry to date, the paper outlines constraints to industry development, the main issues to be resolved, R&D priorities and achievements to date, and recommendations for the future development of the industry. The paper proposes that it is essential for Vanuatu to move away from production of copra, crude coconut oil and copra meal that are used in the manufacture of basic foodstuffs, animal feeds and industrial products; and look towards a future in the high-value and niche coconut product markets, which are geared to health and nutrition.

Introduction

This paper focuses on the background to the strategic issues and priorities identified in ensuring the sustainability of the Vanuatu coconut industry, and how research and development (R&D) should be targeted to achieve key objectives. Topics covered in this paper are:

- a brief history of Vanuatu's coconut industry and its current status and key features
- constraints to industry development
- the main issues to be resolved
- R&D achievements and priorities
- recommendations for the future development of the industry.

The presentation emphasises the role of the Vanuatu Department of Agriculture and Rural Development (DARD) and the Vanuatu Agricultural Research and Training Centre (VARTC) in implementing the European Union (EU) – Government of the Republic of France (GoF) funded Producers Organization Project 2 (POP 2) and its Coconut Development Programme (CDP).

POP 2 is a rural development project funded jointly by the EU, under the 8th European Development Fund (EDF), and the GoF. The Government of Vanuatu (GoV) contributes to the project through the provision of local staff and office facilities. The project, originally scheduled to run for 3 years from 2002, has been extended by the EU and now has a current expiry date of the end of 2007. The day-to-day implementation of the project is being undertaken by a project management team reporting to the Director of DARD.

The three key priorities of POP 2 are as follows:

1. the support of existing, and the creation of new, Producers Organizations (POs)
2. improved agricultural extension and applied research
3. the commercialisation of agricultural crops.

POP 2 comprises the following four key components:

1. support and strengthening of identified existing POs, and the creation of new POs through capacity building, training, and technical and financial assistance

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2. support of agricultural research and extension through training and technical assistance to the DARD and VARTC
3. improvement of marketing efficiency and enhancement of domestic and export marketing opportunities through the dissemination of marketing information and improved producer organisation
4. project management.

From its inception POP 2 has operated seven specific product development programs, namely coconuts, cocoa, coffee, spices, root crops, beef cattle and fishing. The current focus is on the coconut, cocoa and beef cattle development programs.

POP 2 supports the Vanuatu coconut industry through its CDP, which to date has undertaken the following initiatives:

- studies on the feasibility of coconut oil biofuel production at the village level, and the development and marketing of Vanuatu coconut products
- infrastructure developments for copra drying and transport for copra
- PO capacity building in the area of management and administration, including bookkeeping and accounting
- marketing, rural credit/collection/grouping/ negotiation with buyers
- support and identification of new value-adding initiatives such as virgin coconut oil (VCO) and biofuel
- development of synergies and cross-cutting impacts with beef cattle and cocoa production
- support to coconut extension and R&D through budgetary assistance, training and technical advice to DARD and VARTC.

Vanuatu coconut industry—background

From time immemorial, in common with other Pacific islands countries, the coconut has played a key role in the livelihood of the peoples of Vanuatu, providing them with food, building materials and ingredients for local medicines. The coconut is also used in custom ceremonies and is integral to the culture and lifestyles of Ni Vanuatu society. Around 130 years ago, in the 1870s, coconuts began to be used for the production of copra. This was exported primarily to Europe for crushing into oil and meal, mainly for use in the soap, cooking oils and animal feedstuff industries.

From the latter part of the 19th century coconut plantations geared to copra production were developed, mainly by European colonialists. They transformed the Vanuatu landscape, economy and way of life of the people. As the plantation sector developed, beef cattle were introduced and grazed beneath the palms, and coconuts were interplanted with cocoa. From 1923 to Independence (1980) foreign indentured labour, mainly from former French colonies in Indochina, were employed. The smallholder sector of the industry also developed rapidly and by the 1930s accounted for about 30% of copra production. This figure had increased to 73% by Independence and is currently in excess of 90%.

Production of copra had reached 4,000 t by 1919, 15,000 t by 1930 and 46,000 t at the time of Independence, accounting for 76% of export earnings. Since Independence production has fluctuated between 47,800 t (1984) and 25,000 t. The variations in production have been attributed to the impact of cyclones, fluctuations in the copra price, competition from more profitable crops and cattle, and declining yield. There has been a slow but steady decline in production, with copra and coconut oil currently accounting for only about 25% of export earnings.

While coconuts grow throughout the Vanuatu archipelago, production is now concentrated in the northern geographic zones of Malekula, Santo–Malo, Ambryn, Ambae–Maewo and Banks–Torres, which account for around 97% of the total output.

The last nationwide agricultural census in 1994 did not attempt to measure the area under coconuts, but rather concentrated on the variety of coconuts planted, household consumption and marketing concerns. Therefore, the latest detailed area figures available are those of 1983, which estimated some 18,839 ha planted for commercial plantations and 72,452 ha for smallholders, totalling 93,291 ha. This figure, particularly for plantations, has since declined. Current average yield is low, at around 630 kg/ha, and declining.

Two copra crushing mills are operational in Luganville, exporting crude coconut oil (CNO) and manufacturing CNO products (oils/soaps), and together they have the capacity to handle all the copra produced in Vanuatu. However, copra is still being exported while also being imported from small Pacific neighbours, a situation which does not make economic sense.

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The coconut industry is regulated by the Vanuatu Commodities Marketing Board (VCMB), a statutory body which issues export licences to private sector exporters and levies what is in effect an export tax on copra and coconut oil. The role of the VCMB, established 25 years ago, and its cost to coconut growers is currently a sensitive issue in the industry, and should be reviewed in the light of current domestic and global realities in the coconut sector.

Development constraints and key issues

A question often posed in relation to Vanuatu's coconut production is: 'Does Vanuatu have unique problems, for example cyclones, customs, lack of large-scale commercial agricultural enterprises, poor infrastructure, lack of rural credit, high transaction costs?' The answer is probably no.

The following key constraints have hindered development of Vanuatu's agriculture in general and are, for the most part, all applicable to the coconut sector:

- a wide variety of taxes, policies and regulations, including high trade taxes
- lack of competition in markets for credit, shipping, utilities and other inputs
- inefficient and loss-making state farming and marketing bodies, e.g. VCMB
- traditional land tenure that has been a barrier to commercial investment
- land, air and sea transport that are both unreliable and expensive
- domestic markets that are small and export markets that are distant and difficult to penetrate
- excessive utility charges
- an exchange rate that tends to be overvalued by capital inflows from aid donors and trade taxes
- investors who are discouraged by uncertain government policies and excessive bureaucracy
- labour that is relatively high cost and has generally low productivity
- high age profile and low productivity of existing coconut stands, and lack of a comprehensive and extensive replanting program
- Melanesian garden farming systems that discourage smallholder specialisation in commercial agriculture.

Coconut research and development

Background

In 1962 Saraotou Research Station, Santo, was established under the management of the Institut de Recherches pour les Huiles et Oléagineux (IRHO). In 1985 management of the station passed to the Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD). Since 2002 the station has been part of VARTC.

From the 1960s research was focused on increasing productivity in a coconut monoculture context, exclusively geared to copra production, by improving the yield potential of planting materials and developing modern and cost-effective management techniques. The research involved coconut plant breeding and agronomy together with improved livestock grazing under coconuts.

In recent years VARTC's R&D focus has been on the optimum use of local genetic material resources, intercropping with food crops, and the economic and technical aspects of smallholder farming systems involving coconuts. Key achievements to date have included:

- development of best practice techniques adapted to Vanuatu conditions in nurseries: planting, fertilisation, crop production and protection, and copra drying
- discovery of coconut foliar decay, a viral disease endemic to Vanuatu, in conjunction with CIRAD, the Australian Centre for International Agricultural Research (ACIAR) and the University of Adelaide
- coconut genetic diversity evaluation supported by the International Plant Genetic Resources Institute – Coconut Genetic Resources Network (IPGRI-COGENT).

Currently the VARTC coconut field gene bank comprises 14 Dwarf varieties and 32 Tall varieties, including a population of 20 Vanuatu Talls. All data on morphological characteristics, flowering and production are regularly gathered and are included in the International Coconut Genetic Resources Database (CGRD). VARTC's coconut palms occupy an area of 212 ha.

Current research and development operations undertaken by VARTC

The objectives of the current VARTC R&D programs are as follows:

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- the creation and selection of improved genetic materials using the Vanuatu Tall (VTT) variety
- the association of coconuts and food crops, particularly within Melanesian farming systems
- depollution and carbon sequestration by coconut plantations
- development of coconut oil biofuel
- soil fertility assessment.

Current activities

The following specific activities are being undertaken:

1. Germplasm conservation—management of the collection of 46 coconut varieties by maintaining and observing the VARTC field gene bank and undertaking:

- the collection of Dwarf varieties and hand pollination to replace palms pulled down by cyclones and those attacked by DFMT (decay foliar disease transmitted by the leafhopper *Myndus taffini*)
- the collection of exotic Talls and the recording of first flowerings
- the collection of local Talls and the recording of first flowerings and yield, and fruit component analysis.

2. Improvement of coconut cultivars for Vanuatu and their dissemination—the only genetic trial currently being undertaken is the hybrid trial of VTT by RIT (Rennell Island Tall). During the 5th and 6th years after planting, the hybrids are showing an average yield of copra of 3.8 t/ha against 2.9 t/ha for VTT (an increase of 31%). A comparative trial between four different populations of VTT will be planted by the end of 2005. It will be regularly monitored in the future and the speed of germination recorded. R&D results in the context of coconut cultivar improvement have been published internationally (Labouisse et al. 2004, 2005).

3. Coconut breeding for the Pacific region—from 1989 to 1999 VARTC was the implementing agency of the project 'Production and dissemination of improved coconut cultivars' in the framework of the Pacific Regional Agricultural Programme (PRAP) funded by EU and coordinated by the Secretariat of the Pacific Community (SPC). Eight trials were established between 1992 and 1999 and around 9,000 palms placed under ongoing individual observation.

4. VARTC priorities for 2006 and beyond—VARTC has identified the following priorities and focus for its R&D program in the future:

- maintenance of VARTC field gene bank genetic resources
- continuation of the breeding selection program of hybrids adapted to Vanuatu conditions
- ecophysiology studies
- studies of coconut-based farming systems
- diversification of coconut products, particularly in the coconut oil biofuel and carbon markets
- maintenance of regional activities of VARTC in coconut breeding
- maintenance and observation of PRAP hybrid trials and the publication of results
- training of national staff
- maintenance of close links with local partners (DARD, POP 2, the Vanuatu Cultural Centre) in the dissemination of improved planting material; and, with regional and international organisations [SPC, IPGRI, International Fund for Agricultural Development (IFAD), COGENT, Asian and Pacific Coconut Community (APCC), CIRAD, EU and Asian Development Bank (ADB)] in funding projects and exchanging information, training and technical advice.

Strategic issues and R&D priorities

It is considered essential for Vanuatu to move away from production of copra, crude CNO and copra meal used in the manufacture of basic foodstuffs, animal feeds and industrial products; and look towards a future in the high-value and niche coconut product markets, which are geared to health and nutrition. The development of coconut oil biofuel for domestic use, although used for more industrial purposes, is probably a special case in view of escalating world mineral fuel prices and the high cost of imports into small island states. It is believed that this policy is also the stated objective of APCC for the industry. Such a change of focus is particularly important for Vanuatu in view of its disadvantages in terms of low economies of scale, its small island status and its high transaction costs.

Therefore, in order to achieve objectives, the main constraints to development and sustainability need to be addressed as priorities as follows:

- Low productivity should be addressed through new planting and replanting with suitable varieties geared to product development; for example, VCO

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is said to need traditional varieties rather than hybrids.

- Melanesian farming systems should be addressed through integration of Vanuatu smallholder systems into commercial coconut farming through intercropping and cattle.
- Labour shortages and high costs should be addressed through mechanisation of harvesting, nut cracking, product processing and packaging.
- Low profitability should be addressed through the phasing out of copra production and processing, with support going to new value-adding initiatives with benefits shared by farmers.

In order to address the above strategic issues R&D should be prioritised as follows:

- New product development should concentrate on VCO, coconut shell charcoal and activated carbon/pith for the horticultural sector; coconut wood; and coconut oil biofuel. Organic certification should also be a priority in order to take advantage of premium markets for health and nutrition products. The development of desiccated coconut, coir products, soaps and oils as branded products for export probably has little chance of success in Vanuatu due to high labour costs and availability, low economies of scale, high transaction costs leading to a lack of economic comparative advantage, and international competition.
- Market research and product promotion into regional and global niche and premium (e.g. organic, fair trade) market development should be undertaken, with particular emphasis on compliance with international rules and regulations regarding environmentally friendly products and technologies.

Recommendations

Vanuatu has limited research and agricultural capability and must avoid duplication of research through underfunded programs. Therefore, it is necessary and essential for Vanuatu to seek closer cooperation and links with other R&D institutions and extension services, particularly in the Asia–Pacific region.

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