

## PROFITABLE PLANS FOR COCONUTS

Bill Lavers

The coconut palm is probably the most widely grown crop in the world. According to a recent report citing Asian and Pacific Coconut Community (APCC) statistics, it is cultivated commercially in some 93 countries on a total land area of almost 13M ha. Many of the countries in which it is grown – the Pacific Islands, for example – are very small nation states, however, and the coconut is first and foremost a basic food resource for people for local people, sustaining the daily livelihoods of many millions in rural populations.

Commercial production of coconut oil is dominated by a small handful of countries – Philippines, Indonesia and India – and even here the majority of coconut crop is used locally in a range of traditional products. In India, for example, it has been part of the Ayurvedic tradition for more than 2,500 years.

### Coconut Production

The Philippines is a world leader in coconut oil production and, since 2000, it has been producing 1.3-1.5M tonnes/year, followed by Indonesia with 750,000-950,000 tonnes, and India with around 400,000 tonnes. Secondary producers are Mexico (up to 120,000 tonnes), Malaysia and Sri Lanka (*see Figure 1*)

Yields of coconut oil are seldom more than one tone/ha, although theoretically they could be much more – in the range of 1.5 – 2.0 tonnes/ha. Assuming that the total cultivated area of 13M ha could achieve yields at these levels, world production of coconut oil could potentially be in the region of 15-20M tones. In practice, it has never exceeded

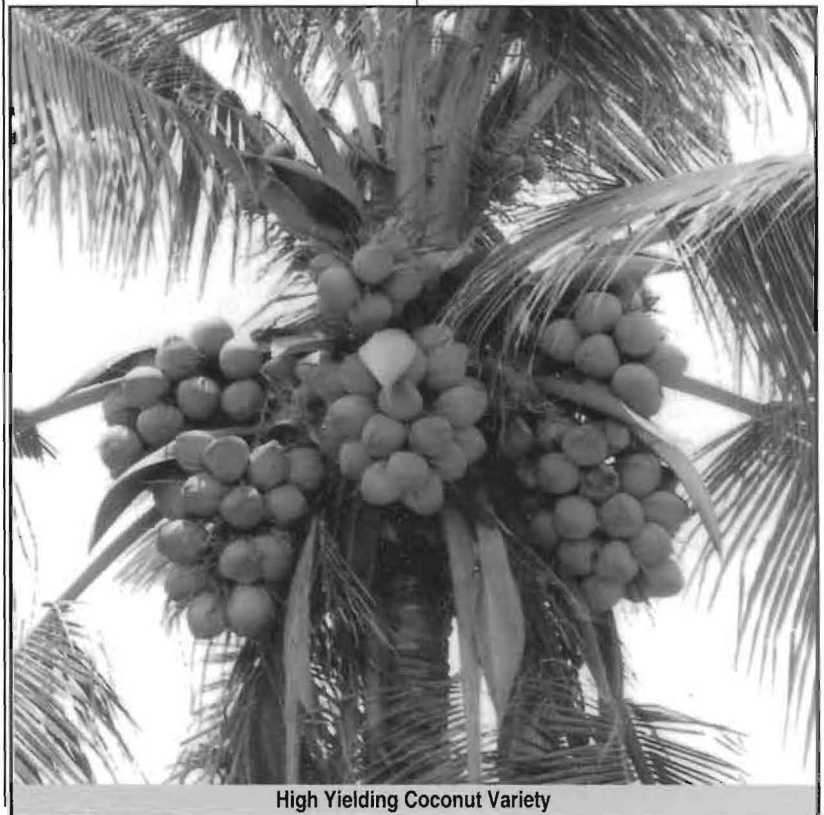
Figure 1: World Coconut Oil Production

Year	Coconut Oil Production (M tonnes)
1996/97	3.74
1997/98	3.37
1998/99	2.72
1999/00	3.37
2000/01	3.59
2001/02	3.17
2002/03	3.14
2003/04	3.29
2004/05	3.46
2005/06	3.47
2006/07	3.26
2007/08	3.49
2008/09	3.55
2009/10	3.63

4M tones and has been hovering around 2.5-3.5M tones for more than a decade, while production

of palm kernel oil – its main competitor as a traded lauric oil – has grown progressively from less than 2M tones in the mid1990s to almost 5M tones today, on the back of the sustained growth in palm oil.

In fact, despite continued attempts to improve productivity in the coconut sector among all the major producer countries, with many initiatives over the years, yields have continued to decline in most instances. Declining productivity, the high cost of production – both of copra and its derived products – in many Asia-Pacific nations, and the volatility of international prices have combined to present a continual challenge to the governments of these countries as they struggle to improve the livelihoods of their rural communities.



High Yielding Coconut Variety

## Achieving the Hidden Potential

The recent focus has not only been on rehabilitation and productivity improvements, however. There is also a growing awareness that product diversification and production to maximize added-value in coconut products is the key to greater prosperity for those who rely on coconuts for a living.

Harvested whole coconuts vary widely in composition, not only in the size of the nut, the thickness of the shell and the weight of fiber; but typically they may contain more than 50% water, up to 40% oil and 6% protein. The copra obtained by drying the meat from the nuts may typically contain 60-70% oil, and the high lauric content apart of this oil (up to 52%) is what sets it apart from the other traded vegetable oils, along with palm kernel oil, its main competitor in trade. High in saturates and low in polyunsaturates, coconut oil has high oxidative stability, and useful melting properties for food applications. Its low molecular chain length also makes it particularly useful for a variety of oleochemical applications.

But, while the lauric status usually commands a premium over the remaining longer molecular chain length oils in international trade, lauric oils are still commodities, subject to the price volatility of trade cycles beyond the industry's control.

Quality control is also a key issue in coconut processing. In the past, large cargoes of copra shipped to Europe for crushing have been rejected because of contamination with aflatoxin, the mycotoxin associated with mould growth. In producer countries, maintaining the quality of copra – which is produced at local level, often in small-scale

village enterprises – is the key to adding value later.

Applying new technology at all levels of the production chain – for productivity, for better quality copra, for utilizing and valorizing waste and by-products, and above all for the opportunity to diversify into new value-added products catering for the health and wellness markets – is the key to moving away from commodity status for the coconut sector.

### Coconut Productivity Initiatives

In the past few years, all major coconut-producing countries have been pursuing new productivity initiatives, with varying degree of success.

The Philippine Coconut Authority, for example, announced in 2008 that it had successfully implemented the country's National Coconut Productivity Programme in 2008, with the planting of an additional 52,500 ha with almost 7.9M seedlings, as well as distributing salt (sodium chloride) fertilizer for some 65,000 ha in the first phase of a nationwide salt fertilization project. The second phase of this is said to be ongoing.

In Indonesia, coconut is the second largest crop after paddy rice. According to a recent study report, 70% of country's total production of coconut are consumed by households – for basic food and drink – and only 30% is utilized industrially, for production of coconut oil but also desiccated coconut, coconut milk and cream, coconut water, coconut sugar, and charcoal derived coconut shell.

In North Sulawesi Province (NSP), the country's third largest coconut producing province, there have been development initiatives under implementation since the late 1990s. with a focus

on improving productivity that has mixed success until quite recently. Even in NSP, which is now seen as a model for modern coconut production and processing, more than 95% of estate holdings are operated by small farm enterprises so that even large coconut processing industries depend on these units for their raw materials.

A 'coconut cluster' programme, organized around collective copra production and integrated processing, was introduced in 2000 and has made 'tremendous progress' not only in basic productivity but also in "accessibility to value addition", says the report.

The combination of good manufacturing practice (GMP) and integrated processing for added value is seen as the best way to achieve the diversification of products, and utilization of waste and by-products, that are essential to profitability.

At the same time, the economic importance of cultivars – in terms of the size of nuts, kernel content, shell and water – has not been overlooked. In NSP, the average yield of copra is 1.123 tonnes/ha/year, while some tall tree varieties planted in the province give a copra yield of 2.5-3.5 tonnes/ha. But poor management and inadequate pest control has meant that, despite all efforts so far, the overall trend in yield with these tall varieties is still downwards, with 1.9 tonnes copra/ha cited for improvement, especially among the smallholdings sector.

In Malaysia, with along with Mexico and Sri Lanka is a much smaller producer on the world scale than Indonesia and the Philippines, there is also a focus on revitalizing the coconut sector. In acreage terms, coconut is the fourth most important crop, after palm oil, rubber and paddy

rice: but land is at a premium. It is hoped that a combination of proactive policies and strategic investments - known as the Coconut Industry Roadmap - will lead to improved yields, to compensate for the decreasing land area devoted to coconut.

As with Indonesia, most of the coconut harvest in India is used in households. It is a 'homestead crop' found in most rural gardens, where it is tapped for "toddy" before the fresh nuts are collected for multiple culinary uses within the home. On top of this, India's industrial production of coconut products is almost entirely consumed within the country, with little exported up to now. But that may be about to change.

In 2009, India's Coconut Development Board - which has been instrumental in the various support initiatives aimed at developing the country's coconut industry - was declared an Export Promotion Council (EPC) by the Ministry of Commerce. Under the new foreign trade policy (2009-2014), the EPC status gives the board new responsibilities to promote exports of all coconut products other than those made from husk and fiber. These efforts are expected to focus on the Middle East, where there is a large ethnic population, representing an existing market for traditional coconut products; and also on a new markets, including those for (westernized) food-and-health-related products such as virgin coconut oil, and "coconut-based convenience foods". The focus is on the whole nut, from copra, coconut oil and desiccated coconut through to coconut shell crafts and activated carbon derived from coconut shells.

**Diversification is the Key**

The Philippines, the world's pre-eminent supplier of coconut

products, is said to exports over 40 coconut products, including cocochemicals and coir products, the so-called "coconut mating" obtained from the fibrous tissue surrounding the fresh nut. Marketing shell, coir, desiccated coconut and such products all contribute to the profitability of coconut processing, but a new wave of value-added products has now been identified.

In both in India and Sri Lanka, there is a strong and growing in these new products - making virgin coconut oil, canning tender coconut and bottling coconut water, for example - but they all achieve added value through raising quality standards through the production chain.

Ever since the mid-1990s, when it was discovered that the antiviral compound monolaurin is produced in the body when coconut oil is digested, interest in the health aspects of coconut products has been growing in industrialized countries; and VCO has been on the market now in Europe, USA and Japan for several years.

There are several different processing methods that can be used to obtain VCO, but the quality of the oil must be certified as complying with quality of the oil must be certified as complying with appropriate standards if it is to be

told as such in international markets (see Figure 2)

As with conventional (refined) coconut oil, VCO is high in saturated fat and low polyunsaturated fat content, giving it high oxidative stability; and it is now well established that coconut oil is digested differently from the longer chain oils and fats, so that it has "cardion-protective" value compared to other saturated fats.

In view of its monolaurin effect, coconut oil has been claimed to be a palliative treatment for viral conditions. Latest claims include defence against the global outbreaks of the H1N1 'swine flu' and help in the fight against Type II diabetes, following publication of research in Australia.

Coconut oil's health functional benefits, and its ability to raise the metabolic rate have become recognized internationally by sports nutritionists. But the "cardio-protective" effects of other coconut products have also been given a recent boost. There is nothing new about drinking coconut water in the countries where coconuts are grown, but the product is now entering the beverage markets of the western world.

Hard on the heels of its launch of carbonated milk drink in the USA in 2009, the Coca Cola company has been reported to be considering buying a stake in a California-based producer of a coconut water drinks. This news came after rival PepsiCo announced last August that it had acquired Brazilian coconut water producer, Amacoco Nerdeste, Ltda. Coconut water is seen one of the fastest growing beverages in Brazil and the USA.

*Bill Lavers is consultant editor at Oils & Fats International.*

*This article is through the courtesy of Oils & Fats International.*

Figure 2: Virgin Coconut Oil Standard	
Colour	Water White
Flavour	Natural Fresh Coconut Aroma
Taste	Mild Coconut Taste
FFA	<0.2%
Moisture	<0.2%
PV	3 mg/kg oil
Additives	Nil
Contaminants	<20%
Heavy Metals	No more than 5ppm
Source: USDA	