

## COCONUT GROWING IN FIJI ISLANDS

### Location

The Fiji Islands are situated in the South Pacific Ocean and the archipelago includes well over three hundred islands out of which not more than 100 are permanently inhabited, although many more are visited periodically to fish or gather coconuts. The total land area of Fiji, including the Rotuma group which lie about 240 miles North-West of the main Fiji group, is approximately 7095 square miles more than half of which is contained in the island of Viti Levu, which with the second principal island Vanua Levu, makes up about 87 per cent of the total area. The islands lie within the southern tropics that is between the Equator and the Tropic of Capricorn. As the most northern Fiji Island is 1100 miles from the Equator and the most southerly island, 1500 miles from the Equator, they experience a typically tropical oceanic type of climate. The two main islands of Viti Levu and Vanua Levu each has a 'wet' and a 'dry' side, the wet or windward sides being in the south-east and the dry or leeward side in the north and west. The north-west Monsoon which blow in the hot summer months and occur in Fiji as the northerly winds bring rain to the wet zones of the islands also besides the prevailing easterly winds. In both zones rainfall is least in the middle or winter months of the year, but in both it rains more in summer months; November to April and less in winter months, May to October. Temperature in coastal areas vary from a maximum of 35°C (95°F) in summer to a minimum of 16°C (60°F) in winter. Humidity of less than 60 per cent is rare in the wet zone and, it may range as high as 95 per cent. In the dry zone it ranges from a maximum of 86 per cent and goes down as low as 45 per cent occasionally in some places. The location of the islands indicates that they do not lie far within the ecological limits for successful coconut cultivation. The climatic conditions in the wet zones of the islands are favourable for the growth of the coconut palm. Hence Fiji's coconut plantations are situated on the wet sides of Vanua Levu, Taveuni and in the islands of Lau, Yasawa and Lomaiviti groups. Very little is produced in the island of Viti Levu.

### Beginning of coconut cultivation

Coconut cultivation in Fiji dates from European settlement around the mid-nineteenth century. Coconut plantations are reported to have arisen from this time onwards when the price of cotton, which was then an important estate crop and for which good price had been received, went down as a result of the

American Civil War and interest of the farmers outside the sugarcane areas turned to coconut planting. Another reason attributed for planting of coconut was the introduction from Ceylon of Hemileia leaf disease which was catastrophic to existing coffee plantations and farmers planted coconut as an additional or alternative crop.

### Acreage and production

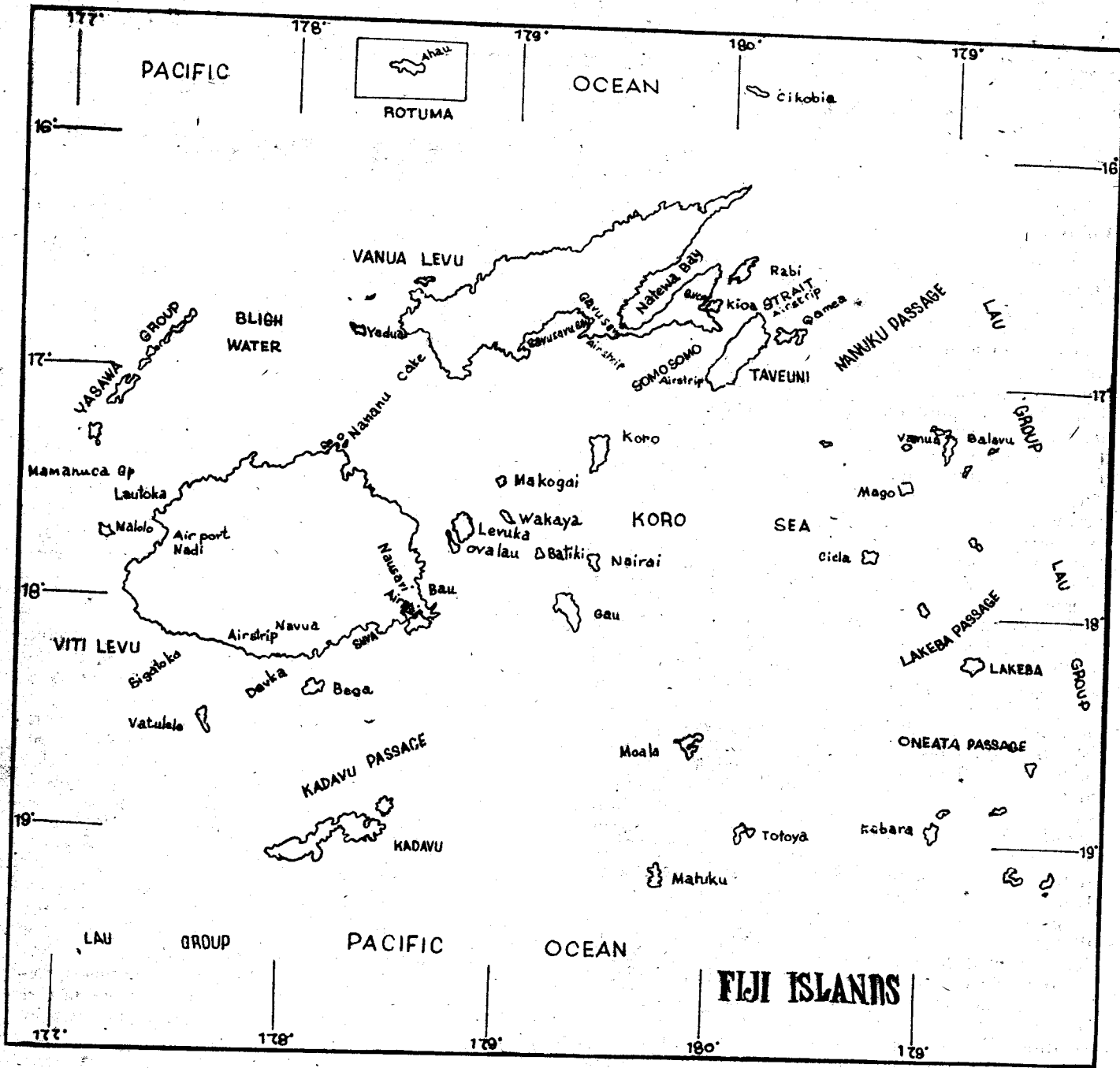
Statistics of acreage and production of coconut in Fiji are sparse. Various estimates of acreages under coconut have been made but they are still uncertain. It is presumed that about one third of the arable land of Fiji is under coconuts—about 200,000 to 220,000 acres of which about 180,000 to 200,000 acres may be under production. The national average production is estimated to be less than 600 lb of copra per acre.

### Coconut industry in National Economy

Today, the coconut industry holds an important place in the export economy of Fiji. Coconut products (mainly copra, oil and cake) on an average worth some 5 million dollars exported annually form next to sugar, the second largest agricultural export of the Dominion. Of Fiji's annual production of copra the bulk is exported as coconut oil, to U.K. The copra that is exported mainly goes to Japan. Coconut meal and cake are exported mainly to West Germany. Although by world standard Fiji is a small producer accounting for a little over one per cent of the total world production, it is in the Pacific area one of the largest producers. On many islands copra is the only major source of income to farmers. In spite of its importance, the coconut palm has not received the attention it deserves with regard to its cultivation, fertilization and improved planting material. The palm has not been treated by the farmer as a cultivated crop but as something that grows by itself.

The coconut plantations are company, European, part-European and Indian owned. Some are large producing units but many are small producers. Some of the plantations have been owned by a single family for generations. Replanting is done in some of the plantations which are quite old while it is being undertaken on others. In addition to these plantations there are natural groves and plantations owned by Fijians which account for more than 50 per cent of the copra production. Fijians have been encouraged by the Government to plant up new areas and to replant old areas.

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### Coconut cultivation

In Fiji, coconuts are grown on a wide range of soils like sandy soils, colluvial soils, volcanic ash soils, alluvial soils, nigrescent soils and latosols. Usually lands which are found not suitable for growing root crops, which are the staple food for Fijians, are planted with coconuts. In Fiji as in the Pacific area, seedlings of three or four leaves in the nursery are generally selected for planting. No attention is given for regular spacing or depth of planting. Surface planting is the practice here. Seedlings are planted where there is space. No regular weeding of the

coconut groves is carried out except that a few horses or cows are allowed to graze in the groves. The palms are also not manured. The groves are generally overgrown with other trees and weeds because of the favourable rainfall, with the result that it is difficult to find the dried fallen nuts and collect them during harvest. There is no regular harvest of coconuts by climbing as done in India. Only the dried nuts which are fallen are collected at regular intervals. Collection of the fallen dried nuts is carried out by walking through the groves. The nuts are collected in gunny bags and taken to a central place for cutting. Because of the rough terrain the farmer

in most cases confines his collection to the existing tracks thus leaving a major portion of the grove. Traditionally the nut is dried in open air vatas. Though first grade copra could be produced by this method, usually it is left to the mercy of nature resulting in the deterioration of the quality. Efforts have been made to improve the quality of native copra by erection of simple hot air driers. Intercropping in coconut plantations is widely practised in Fiji as in other countries. Cocoa, banana, dalo (Taro) and cassava are mainly grown in coconut plantations. Other crops grown in small areas are Yanqona (*Piper methystem*) from the root of which their national drink Yanqona or Kava is made, Masi (*Broussonetia papyrifera*) for preparing the masi or tapa cloth for making dress for special ceremonies, Kawa (yam), Kumala (Sweet potato) and voi voi (*Pandanus thurstoni*) from which the Fijians weave baskets of all kinds, mats and other items. But in relation to total acreage the proportion of intercropped area under coconuts is relatively small. Most of the plantations have cattle which are allowed to graze under the coconuts. A substantial income from cattle adds to the income of the farmer. Because of the fluctuation in copra prices it is felt that coconut monoculture will not be of much importance in future.

## Varieties

The following varieties of coconut are met with in Fiji. They can be grouped under two headings, the commercial varieties and non-commercial varieties.

### Commercial varieties

#### A. FALL VARIETIES

##### (1) Fiji Tall (Niu)

This is the ordinary tall variety commonly grown throughout Fiji. They are like the local West Coast

Tall of Kerala and start bearing late and continue to produce 60 to 80 years depending on environment and management. The nuts are medium sized. There is considerable variation in colour, shape and yield of nuts.

##### (2) Rotuma Tall

This is similar to the Fiji Tall except that it bears less but large sized nuts. This is from the Rotuma Island, the principal island of a small group which lies about 240 miles North-West of Fiji in lat. 12.275 and long. 177.7E. It is administered as a part of the Dominion of Fiji. In its volcanic soil coconut thrives well.

### B. DWARF VARIETIES

##### (1) Malayan Dwarf

Malayan Dwarf was introduced into Fiji from Malaya in 1922. Because of their early bearing, short stature and perhaps easy accessibility for harvest they are now quite widely distributed though they are not as popular as the common tall. Among the three types green, orange and yellow, orange is the most commonly grown type. The nuts are smaller and have a lower copra content when compared with the tall.

##### (2) Niu Leka

This variety is indigenous to Fiji and is not met with anywhere in the coconut growing areas of the world except in the Pacific region. This is cross-pollinated like the ordinary tall but has a dwarf or semi-tall habit. They differ from the common tall and dwarf in having a heavy, dense and strong crown shorter fronds and stout trunk. The nut colour varies from green to reddish. The nuts are larger and have a higher copra content. Fruit nut analysis of these important commercial varieties are:

Variety	Fruit weight (g)	Nut weight (g)	Percentage of husk in fruit	Meat Weight (g)	Water weight (g)	Shell weight (g)	Copra weight (g)	Nuts required for a ton of copra
<i>Tall</i>								
1. Fiji Tall	1246.6	741.2	59.5	369.9	182.3	189.0	204.5	4973
2. Rotuma Tall	1925.0	1280.5	66.6	618.5	387.2	274.8	373.9	2720
<i>Dwarf</i>								
1. Malayan dwarf	1100.0	665.4	60.5	303.4	214.0	148.0	175.3	5801
2. Niu Leka	1498.1	930.1	62.1	449.3	254.7	235.1	272.1	3737

### Non-commercial varieties

#### 1. Niu Drau or Bulan Drau

This tall variety bears large number of very small sized nuts. It resembles the Laccadive micro variety met with in Laccadive Islands.

#### 2. Niu ni mangi mangi

This is a tall palm with large elongated nuts with thick husk. The nut is locally used for fibre and rope making.

### 3. *Niu yalewa*

This is the *spicata* variety met within several coconut producing countries. It bears an unbranched spadix with numerous female flowers with a few male flowers. The flowers are borne on the unbranched spike of the inflorescence.

#### Pests and diseases

Compared to many other countries Fiji is relatively free from pests seriously damaging coconuts. The important pests which attack the coconut palms in Fiji are the Rhinoceros beetle and the stick insect. The stick insect is not seen in India. The damage caused by this insect is very severe in certain areas where it has completely defoliated and killed the palms.

Fiji is fortunately free from the various serious diseases of coconuts reported from other countries of the world. All coconut diseases recorded in Fiji are generally associated with weakened vitality of the palm brought about by poor drainage, overgrown conditions and various injuries to the palm. Among the diseases occasionally noticed here and there in Fiji are the Bud-rot and Stem-breeding.

#### Copra making

The fallen dried nuts in the plantations are collected at regular intervals in gunny bags and taken to a central place for cutting. The farmer does not sell nuts. There are copra driers in each plantation. The dried nuts are cut and converted into copra before disposal.

#### Steps taken to improve the industry

The Government of Fiji have taken a number of steps to improve the copra production which is one of the important dollar earner of the Dominion by initiating schemes and setting up bodies to deal with different aspects of the copra industry. A coconut subsidy scheme designed to finance at least in part

the clearing of undergrowth from plantations, the thinning out of native groves, replanting of senile trees and planting of new seedlings has been in force since 1963. In Fiji's Sixth Five Year Development Plan 1971-75 it was anticipated that over 500,000 Fijian dollars (1 F.D. = Rs. 8.50 approx.) would be spent on a new subsidy scheme. Fiji's copra production fluctuates according to the weather and the world price for copra. The coconut industry ordinance enacted in 1965 provides for the development and control of copra industry, for the improvement and the quality of copra by a system of grading and a price structure for the purchase of copra. Provision was made in the ordinance for Coconut Board and a Coconut Advisory Council which have been set up. The Coconut Pests and Diseases Board set up in 1953 is responsible for the rhinoceros beetle eradication campaign. It has succeeded in keeping the beetle under reasonable control in all port areas and in some areas of infestation by strict quarantine procedures. It has not so far spread to the main coconut growing areas.

#### Coconut Research

Though there was not a separate research section for coconut till 1969, some excellent research work on copra and pests and diseases had been done. Since 1970 a separate coconut section under the Research Division of the Department of Agriculture has been set up. The present research programme consists of agronomic studies, a short term programme of improved seed production and a long term breeding programme. There is a separate UN (SF)/SPC Project for the control of Rhinoceros beetle since 1964.

Like the rest of copra producing countries in the world, Fiji has been suffering from price depressions and booms. The Dominion is subject to hurricanes. A severe hurricane can put an end to production for nearly 12 to 24 months. The coconut palms in Fiji must be recovering now from the effects of the hurricane Bebe which struck the Dominion in 1972.

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—Editor