PIDP
Pacific Islands Development Program

RESEARCH REPORT SERIES No. 10

THE FIJI FRESH GINGER INDUSTRY: A CASE STUDY IN NON-TRADITIONAL EXPORT DEVELOPMENT

by

Andrew McGregor

EAST-WEST CENTER
RESEARCH REPORT SERIES


Distributed by
University of Hawaii Press
Order Department
2840 Kolowalu Street
Honolulu, Hawaii 96822
THE FIJI FRESH GINGER INDUSTRY: A CASE STUDY IN NON-TRADITIONAL EXPORT DEVELOPMENT

by
Andrew McGregor

1988

Pacific Islands Development Program
East-West Center
1777 East-West Road
Honolulu, Hawaii 96848
Andrew McGregor, PIDP Research Associate, has had extensive experience with the agricultural sector in the Pacific islands region and the Caribbean. In 1985 he was the team leader of the Fiji Agricultural Sector Study conducted on behalf of the Asian Development Bank (ADB) and Fiji’s Ministry of Primary Industries (MPI). Subsequently, he became MPI’s Commodity Development Advisor under the auspices of the Food and Agriculture Organization of the United Nations. McGregor, who holds a Ph.D. from Cornell University, is now the project leader of PIDP’s Private Sector Project.

Copyright © 1988 by the East-West Center
All rights reserved
Manufactured in the United States of America

Library of Congress Cataloging-in-Publication Data
McGregor, Andrew.
The Fiji fresh ginger industry: a case study in non-traditional export development / by Andrew McGregor.
p. cm. — (Research report series ; 10)
"May 1988."
ISBN 0-86638-109-0
1. Ginger industry—Fiji. 2. Export marketing—Fiji. I. Title.
II. Series: Research report series (Pacific Islands Development Program (East-West Center)); no. 10.
HD9211.G553F45 1989  88-30891
338.1’7383—dc19  CIP

Distributed by
University of Hawaii Press
Order Department
2840 Kolowalu Street
Honolulu, Hawaii 96822

∞ The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials

ANSI Z39.48–1984
CONTENTS

Tables v
Photographs v
Foreword vii
Acknowledgments viii
Acronyms ix
Map: Ginger growing areas of Fiji x
Executive Summary xi

The World Ginger Economy 1
   The commodity 1
   Dried ginger 1
   Processed ginger 2
   Fresh ginger 2

Ginger in the Fiji Economy 3
   Agronomic and economic characteristics in Fiji and Hawaii 3
   The basis of the Fiji industry 7

The Dynamics of Developing a New Export Industry 11
   The process of market identification and development: the era of laissez-faire growth 11
   The era of government intervention and progress toward orderly marketing 14
   The institutional and legal reforms of 1987 17
   Requirements for the future 28

Appendix 1. The Package of Practices of Ginger Production in Fiji 31
Appendix 2. Ginger Marketing Margins and Export Prices to North America, 1987

Appendix 3. Quality Grading Standards for Fiji Ginger

Notes

References
TABLES

Table 1. Fiji fresh ginger exports to North American markets 8

Table 2. Suppliers of fresh ginger to U.S. mainland, 1984, 1986, and 1987 9

Table 3. Market distribution for Fiji’s processed ginger products, 1983–87 10

Table 4. Base sea-freight quota allocations to North America, 1987 12

Table F7. Fiji and Papua New Guinea prices, 1982–86 40

PHOTOGRAPHS

Figure 1. Land being prepared for ginger planting on typical steep slopes in the Waibau area 4

Figure 2. Waibau farmers washing ginger before transporting it to exporter shed 5

Figure 3. Sorting and cleaning of fresh ginger at exporter shed 6

Figure 4. Fiji Fancy shown on right and Fiji Standard on the left 24

Figure 5. Hawaiian ginger farmer’s curing and packing operation 26

Figure 6. Fiji “master farmer” pilot scheme in which farmers are responsible for their own curing 27

Figure 7. Hawaiian farmers washing ginger on portable racks 28
This report was prepared as part of the Pacific Islands Development Program's Private Sector Project that was initiated by island leaders at the Second Pacific Islands Conference in Rarotonga, Cook Islands, in 1985.

This study of the Fiji ginger industry represents the first of a series of case studies that examine non-traditional export development in the Pacific islands. These case studies analyze the role of the private sector in facilitating the development of new export-oriented industries. Their orientation is toward government policy in support of appropriate private sector involvement in industry development.

Charles W. Lepani
Director
Pacific Islands Development Program
ACKNOWLEDGMENTS

The author wishes to acknowledge the assistance provided by various individuals and organizations. In Fiji's Ministry of Primary Industries (MPI) the support and assistance of Navin Patel, Deputy Permanent Secretary, Luke Ratuvuki, Assistant Director of Agriculture (Extension), and Amar Singh, head of the Ginger Extension Team, are gratefully acknowledged. Amrit Prasad of the Ministry's Economic Planning and Statistics Division provided extensive assistance with data collection. The work would not have been possible without the whole-hearted support of the Fiji Fresh Ginger Exporters Association. Special thanks are due to the association's President R. D. Patel, Vice-President Alf Hazelman, and Secretary Joe Chung. Assistance regarding the Hawaiian ginger industry aspects of the study was provided by Melvin Nishina, County Agent for the Puna District, Seymour Tublin, Economic Development Specialist, Hawaii Department of Agriculture, and Paul Kierkiewicz, President of Mauna Kea Agronomics, Ltd. Background information on world ginger markets was supplied by Kerry Mulherin, Chief of Raw Materials, Tropical and Horticultural Products Service, Commodities and Trade Division Foreign Agriculture Service, United Nations Food and Agriculture Organization, and Rex Dull, Agriculture Economist, United States Department of Agriculture. Secretarial assistance was provided by Forrest Hooper. Barbara Yount edited the research report.
ACRONYMS

ADB  Asian Development Bank
EDB  Economic Development Board
EEC  European Economic Community
FEA  Fiji Export Agencies Ltd.
FFGEA  Fiji Fresh Ginger Exporters Association
HGCGA  Hawaii Ginger Commodity Group Association
MPI  Ministry of Primary Industries
NMA  National Marketing Authority
SPARTECA  South Pacific Regional Trade and Economic Cooperation Agreement
TGC  Tripartite Ginger Committee

EXCHANGE RATES
All currencies are in Fiji dollars unless otherwise stated.
September 30, 1986   F$1 equals US$0.8577
September 30, 1987   F$1 equals US$0.7611

CONVERSIONS
One kilogram (km) equals 2.2046 pounds (lbs.)
One hectare (ha) equals 2.471 acres
Ginger growing areas of Fiji
EXECUTIVE SUMMARY

The Fiji ginger industry provides an excellent example of how a dynamic domestic private sector can establish a major new export industry. It also shows how a major industry in a small country can be based on a small specialized export market niche.

This industry evolved by selling fresh ginger to the North American west coast during the Hawaiian off-season. The interlinking of the Fiji and Hawaiian industries—both from a marketing and from a technology transfer perspective—makes this case study particularly interesting.

Although this dynamic (almost laissez-faire) private sector has been the basis of the ginger industry's success, it has also proved to be its major weakness.

The Fiji ginger industry illustrates the need for appropriate institutions and regulations that direct and facilitate private sector development in a manner that is conducive to the long-term interest of the industry.
THE FIJI FRESH GINGER INDUSTRY

THE WORLD GINGER ECONOMY

The commodity

Before the development of the Fiji ginger industry is analyzed in detail, the commodity should be examined in the context of its international market.\(^1\)

Ginger is the root or rhizome derived from *Zingiber officinale*, a herbaceous perennial plant that is cultivated as an annual. It is grown in many tropical and sub-tropical countries, although it is believed to have originated in Southeast Asia. Most ginger is consumed in the country in which it is produced. Yet it is a major spice commodity entering international trade. The international market is highly segmented in terms of both the end product and the source of supply, with three broad categories of ginger being traded: dried, preserved, and green (fresh). Dried ginger is by far the most important category, and fresh ginger the least important.\(^2\)

Dried ginger

Dried ginger is usually traded in whole form or in pieces. It is then ground mainly for use in the food industry either directly or after the extraction of essential oil or oleoresin. The world market is dominated by India (Cochin). Dried ginger is essentially a bulk commodity; that is, it is a storable product with significant volumes traded (an estimated 20,000 tonnes of dried product) and has a large number of traders participating in the market. A small country like Fiji cannot expect to have an influence on price, and its cost structure makes it non-competitive except during the occasional price peaks.

Yet within the broad category of dried ginger, a small premium quality market could be regarded as a niche commodity. This market has been largely supplied by Jamaica and a few
West African countries. The so-called Jamaican ginger has a high oil and low moisture content, which makes it ideal for premium oleoresin. The production of traditional Jamaican ginger suppliers has been steadily declining, thereby providing an opportunity for other producers with suitable climatic conditions to grow ginger. An additional opportunity is also emerging to export undersized fresh ginger for puree production. In North America a shift in consumer preference is occurring away from dried ginger toward pureed fresh ginger. This shift can be seen as part of an overall trend toward high value, fresh food products.

**Processed ginger**

Processed ginger is made from immature (low fiber) rhizomes that are sequentially brined, syruped, and sometimes crystallized. Approximately 10,000 tonnes of processed ginger enters international trade annually. The largest exporters are Hong Kong (raw material imported from China and Taiwan) and Australia, with China, Taiwan, and Thailand also exporting significant quantities. Imports are predominantly by Europe with the Netherlands as the largest consumer. In addition, Japan imports several thousand tonnes of brined ginger for direct consumption.

The last decade has seen substantial growth in Australian exports, which now dominate the high quality end of the market. Fiji, in producing an Australian "type" product, has also developed a reasonable market based on supplying New Zealand and the residual Australian market.

**Fresh ginger**

Fresh ginger represents the smallest category in terms of world trade but the most important one from Fiji's viewpoint, and thus it is the focus of this case study. Fresh ginger is largely used in oriental cooking. This perishable, seasonal commodity means that consumers requiring the product year-round must have suppliers in both the northern and southern hemispheres. The main sources of supply, however, are in the northern hemisphere with Taiwan as the largest exporter selling around 5,500
tonnes. Thus the relative shortages of fresh ginger tend to occur in the second half of the year. Hong Kong is the biggest buyer, with a significant part of Hong Kong's imports being re-exported as processed ginger. Apart from the large Asian producers, several exporters are scattered throughout Central and South America and the Pacific (Fiji and Hawaii). These smaller producers cater to the narrow specialist ethnic markets in North America and Europe. This study focuses on both the Fijian and Hawaiian industries because of their important complementary interrelationship—both in production and in marketing.

Trade in fresh ginger for direct consumption is largely carried out through the fruit and vegetable trade network and is far removed from the bulk commodity trade that characterizes dried ginger. This luxury product represents a small portion of the consumers' budget, and thus it tends to be highly price inelastic; that is, total consumption is not very responsive to changes in price.

GINGER IN THE FIJI ECONOMY

Agronomic and economic characteristics in Fiji and Hawaii

Ginger is an annual crop that is planted in spring and then harvested, depending on maturity, from late winter to early summer. In Fiji the planting must be completed by the end of October, and harvesting occurs from July to November. For the complementary Hawaiian industry, harvesting occurs from January through June. Ginger thrives in a high temperature/high rainfall environment but demands well-drained soil. The Fiji growing areas are located within an 80-km radius of Suva (see map). This location has an ideal ginger growing climate, with rainfall exceeding 3,000mm annually, accompanied by a prolonged hot season. These conditions are superior to those found in both Queensland and Hawaii. However, soil and topographic conditions are generally less than ideal. The soils in which most ginger is grown are deeply weathered, strongly leached, range from acid to very acid, and have low to moderate fertility. These soils, in their virgin state, have well-developed profiles of good structural stability. However, when these soils are used in excess of capability (e.g., the excessively steep
slopes on which ginger is often grown), they become highly erodible (Figure 1). Other parts of Fiji would probably be better suited to ginger growing in terms of soil and terrain quality. However, the government policy has been to concentrate production within a confined geographical area to safeguard the interests of the growers already in place, the majority of whom are Fijian settlers from the outer islands.

Production and marketing are extremely labor intensive. The practices for Fiji ginger production and marketing are summarized in Appendix 1. In Fiji all the numerous husbandry operations, ranging from land preparation to harvesting and packing, are accomplished completely by hand (Figures 2 and 3). Even under the semi-mechanized Hawaiian production system, labor constitutes around 35 percent of the variable production costs (Marutani 1986:3).

Figure 1. Land being prepared for ginger planting on typical steep slopes in the Waibau area.
Intense labor requirements mean that ginger production is invariably based on smallholder systems using small land areas. The average harvested area in both Fiji and Hawai‘i is less than a ha. The largest farms in Hawaii are less than 3 ha in size. Fiji has some farms, operated by Chinese growers, as large as 6 ha. However, these units have been found to be well in excess of an optimum size. Viability depends on obtaining high yields and receiving high unit prices. Farmers in Fiji obtain yields of around 20 tonnes of exportable ginger per ha, which earn around $0.30/kg (uncured). Hawai‘i’s average exportable production approaches 45 tonnes per ha and currently receives a farm-gate price of around US$1/kg (cured, packed, and ready for export). However, Fiji’s significantly lower labor costs mean that the level of profitability between the two industries is comparable.

Both Fiji and Hawaii have substantial industries in terms of employment and income generation, which are sustained by
small land areas. Fiji’s export earnings from ginger now approach $4 million. This amount means that within two decades, ginger has become the second or third largest (depending on the copra price) agricultural export earner. Approximately 250,000 man-days of employment are estimated to be generated annu-
ally (Agriculture Commodities Committee 1985:29). This level of employment has been achieved from a land area of around 100 ha. The Hawaiian industry generates income approaching US$5 million for the big island of Hawaii from about 150 farmers cultivating only 80 ha of land (Hawaii Agricultural Statistics Service 1986:55).

The basis of the Fiji industry

Fresh ginger

The Fiji ginger industry has been built over the last two decades on the basis of supplying fresh ginger to North America (United States and Canada), particularly the west coast. The main consumers have been the ethnic Asian communities and restaurants, with a gradual growth in demand. However, the product has the potential of rapid expansion if its promotion can generate even minimal increases in the per capita consumption rates of the population at large. Fresh ginger constitutes a luxury product where quality—not price—is the key determinant of competitiveness. Fiji’s location in the southern hemisphere enables it to supply this market during the Hawaii off-season. Seasonality and location mean a close interrelationship between the two industries. Hawaii sets the quality standards for the North American market, and it is to this standard Fiji now aspires (see section on grading system for fresh exports). The largest grower/wholesaler in Hawaii can supply the market year-round by importing Fiji ginger. The interlocking of the two industries has strengthened Fiji marketing and has also allowed the industry to benefit from any market development and growth generated by Hawaii. Furthermore, because it is not a direct competitor, Hawaii has been willing to provide technical assistance to Fiji.

The total market for fresh ginger in North America is around 11,000 tonnes, regardless of price within a reasonable range. In recent years Fiji has supplied between 1,800 and 2,400 tonnes for a FOB value averaging some $1.9 million (Table 1). Fiji fresh ginger is air-freighted in June and July and sea-freighted from August through November. Fiji’s market share during its sea-freight period is around 80 percent; a decade ago it was almost
Table 1. Fiji fresh ginger exports to North American markets

<table>
<thead>
<tr>
<th>Year</th>
<th>Sea freight</th>
<th>Air freight</th>
<th>Total exports (kg)</th>
<th>Value $(FOB)</th>
<th>US$ $(FOB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1967</td>
<td>—</td>
<td>—</td>
<td>443,182</td>
<td>£38,285</td>
<td>87,928</td>
</tr>
<tr>
<td>1968</td>
<td>—</td>
<td>—</td>
<td>439,409</td>
<td>£48,013</td>
<td>110,269</td>
</tr>
<tr>
<td>1969</td>
<td>—</td>
<td>—</td>
<td>727,273</td>
<td>125,655</td>
<td>144,292</td>
</tr>
<tr>
<td>1970</td>
<td>—</td>
<td>—</td>
<td>945,455</td>
<td>236,364</td>
<td>271,422</td>
</tr>
<tr>
<td>1971</td>
<td>—</td>
<td>—</td>
<td>579,727</td>
<td>121,743</td>
<td>154,284</td>
</tr>
<tr>
<td>1972</td>
<td>—</td>
<td>—</td>
<td>586,000</td>
<td>146,500</td>
<td>192,139</td>
</tr>
<tr>
<td>1973</td>
<td>—</td>
<td>—</td>
<td>957,600</td>
<td>258,552</td>
<td>339,098</td>
</tr>
<tr>
<td>1974</td>
<td>—</td>
<td>—</td>
<td>999,200</td>
<td>438,400</td>
<td>576,100</td>
</tr>
<tr>
<td>1975</td>
<td>—</td>
<td>—</td>
<td>1,205,300</td>
<td>516,037</td>
<td>521,282</td>
</tr>
<tr>
<td>1976</td>
<td>—</td>
<td>—</td>
<td>995,987</td>
<td>604,390</td>
<td>641,923</td>
</tr>
<tr>
<td>1977</td>
<td>1,016,520</td>
<td>489,880</td>
<td>1,506,400</td>
<td>1,132,375</td>
<td>1,300,759</td>
</tr>
<tr>
<td>1978</td>
<td>1,058,270</td>
<td>385,730</td>
<td>1,444,000</td>
<td>959,515</td>
<td>1,170,608</td>
</tr>
<tr>
<td>1979</td>
<td>1,544,850</td>
<td>115,154</td>
<td>1,660,004</td>
<td>996,795</td>
<td>1,185,389</td>
</tr>
<tr>
<td>1980</td>
<td>1,058,390</td>
<td>181,610</td>
<td>1,240,000</td>
<td>980,148</td>
<td>1,239,005</td>
</tr>
<tr>
<td>1981</td>
<td>1,371,750</td>
<td>147,250</td>
<td>1,519,000</td>
<td>1,755,366</td>
<td>2,002,171</td>
</tr>
<tr>
<td>1982</td>
<td>1,457,790</td>
<td>939,210</td>
<td>2,397,000</td>
<td>2,364,657</td>
<td>2,496,132</td>
</tr>
<tr>
<td>1983</td>
<td>1,418,318</td>
<td>439,296</td>
<td>1,857,614</td>
<td>1,857,616</td>
<td>1,775,509</td>
</tr>
<tr>
<td>1984</td>
<td>1,088,000</td>
<td>720,380</td>
<td>1,808,380</td>
<td>1,423,580</td>
<td>1,245,490</td>
</tr>
<tr>
<td>1985</td>
<td>1,095,910</td>
<td>696,090</td>
<td>1,792,000</td>
<td>1,979,831</td>
<td>1,766,999</td>
</tr>
<tr>
<td>1986</td>
<td>2,006,070</td>
<td>350,930</td>
<td>2,356,000</td>
<td>2,831,515</td>
<td>2,300,923</td>
</tr>
<tr>
<td>1987</td>
<td>1,795,664</td>
<td>177,841</td>
<td>1,973,505</td>
<td>2,635,349</td>
<td>2,108,000*</td>
</tr>
</tbody>
</table>

Sources: MPI Annual Reports (various issues); MPI Quarantine Division Annual Reports (various issues); MPI Bureau of Statistics Annual Trade Reports (various issues).

e = estimated.

100 percent (Table 2). The lost market share has gone to Brazil, which has now absorbed most of Fiji’s market on the east coast. Brazil, as a southern hemisphere producer with the capacity for substantial expansion, now poses a major threat to the Fiji industry. However, Brazil’s high overland transport costs to the west coast, as well as Fiji’s superior quality, still provide Fiji with a competitive edge over Brazil, provided that a reasonable degree of marketing stability is achieved.

Some residual Fiji ginger finds a fresh market outlet in the United Kingdom, the Middle East, and Hong Kong. Fiji enjoys no locational advantages in these markets and thus commands only a small market share. Sales are usually made on a consignment basis in which the exporter is entirely a price taker.
Fiji Ginger Industry


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hawaii</td>
<td>2,254</td>
<td>2,600</td>
<td>3,900</td>
<td>Fiji</td>
<td>1,642</td>
<td>1,673</td>
<td>1,425</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Panama</td>
<td>—</td>
<td>98</td>
<td>10</td>
<td>Brazil</td>
<td>357</td>
<td>1,170</td>
<td>1,001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dominican Rep.</td>
<td>120</td>
<td>63</td>
<td>50</td>
<td>Peru</td>
<td>10</td>
<td>15</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Taiwan</td>
<td>48</td>
<td>59</td>
<td>15</td>
<td>Australia</td>
<td>—</td>
<td>10</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ivory Coast</td>
<td>20</td>
<td>58</td>
<td>4</td>
<td>Argentina</td>
<td>—</td>
<td>—</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Costa Rica</td>
<td>192</td>
<td>39</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Guatemala</td>
<td>2</td>
<td>14</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hong Kong</td>
<td>142</td>
<td>12</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indonesia</td>
<td>10</td>
<td>12</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leeward and Windward Islands</td>
<td>2</td>
<td>6</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thailand</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Japan</td>
<td>13</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nicaragua</td>
<td>31</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Greece</td>
<td>10</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2,845</td>
<td>2,965</td>
<td>4,092</td>
<td></td>
<td>2,009</td>
<td>2,868</td>
<td>2,498</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4,862</td>
<td>5,835</td>
<td>6,590</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sources: USDA (1987-88); Hawaii Agricultural Statistics Service (1986).

p = provisional.

Processed ginger

Fiji has also developed a significant ginger processing industry based on the brining and syruping of immature ginger (6 to 6.5 months) (Table 3). Exports in 1987 were 350 tonnes of processed product, valued at almost $600,000. This industry was initially developed via a joint venture with a New Zealand confectionary company end user. Most sales have been to New Zealand with re-export to the United Kingdom. A market has also been established in Australia. However, exports in recent years have declined due to the depreciating Australian dollar, and to pressure from the large Australian ginger processor, the Buderim Cooperative. This pressure (contrary to the spirit of the SPARTECA trade agreement) caused Fiji to voluntarily
Table 3. Market distribution for Fiji's processed ginger products, 1983–87

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Syruped</td>
<td>Dried</td>
<td>Syruped</td>
<td>Dried</td>
<td>Syruped</td>
<td>Dried</td>
<td>Syruped</td>
<td>Dried</td>
<td>Syruped</td>
<td>Dried</td>
</tr>
<tr>
<td>Australia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tonnes</td>
<td>118.6</td>
<td>13.3</td>
<td>88.5</td>
<td>24.0</td>
<td>32.5</td>
<td>8.0</td>
<td>9.4</td>
<td>71.2</td>
<td>6.0</td>
<td>21.8</td>
</tr>
<tr>
<td>Value ($1000 FOB)</td>
<td>213.9</td>
<td>12.7</td>
<td>154.5</td>
<td>9.8</td>
<td>74.9</td>
<td>15.0</td>
<td>20.0</td>
<td>107.4</td>
<td>17.8</td>
<td>35.5</td>
</tr>
<tr>
<td>EEC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tonnes</td>
<td>32.2</td>
<td>41.6</td>
<td>102.6</td>
<td>69.1</td>
<td>107.9</td>
<td>—</td>
<td>59.0</td>
<td>10.7</td>
<td>294.9</td>
<td>10.5</td>
</tr>
<tr>
<td>Value</td>
<td>57.9</td>
<td>72.4</td>
<td>150.8</td>
<td>157.3</td>
<td>249.8</td>
<td>—</td>
<td>143.4</td>
<td>20.0</td>
<td>454.1</td>
<td>20.0</td>
</tr>
<tr>
<td>USA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tonnes</td>
<td>—</td>
<td>7.5</td>
<td>—</td>
<td>7.5</td>
<td>6.5</td>
<td>5.1</td>
<td>—</td>
<td>—</td>
<td>1.2</td>
<td>—</td>
</tr>
<tr>
<td>Value</td>
<td>—</td>
<td>7.1</td>
<td>—</td>
<td>9.3</td>
<td>14.7</td>
<td>10.4</td>
<td>—</td>
<td>—</td>
<td>2.6</td>
<td>—</td>
</tr>
<tr>
<td>New Zealand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tonnes</td>
<td>245.5</td>
<td>45.2</td>
<td>247.5</td>
<td>28.5</td>
<td>95.6</td>
<td>—</td>
<td>55.6</td>
<td>—</td>
<td>48.3</td>
<td>—</td>
</tr>
<tr>
<td>Value</td>
<td>404.5</td>
<td>47.6</td>
<td>399.4</td>
<td>54.0</td>
<td>209.2</td>
<td>—</td>
<td>107.4</td>
<td>—</td>
<td>107.4</td>
<td>—</td>
</tr>
</tbody>
</table>

Source: MPI Bureau of Statistics Annual Trade Reports (various issues).

p = provisional.
restrain exports. Recently, Fiji has achieved steady growth in its sales to the European Economic Community (EEC), which from 1985 onward has become Fiji's biggest buyer. Fiji enjoys distinct preferential advantages over Australia, which is the market leader. Once the shortcomings in marketing expertise and quality control have been overcome, the EEC could become an extremely substantial market. However, these problems are unlikely to be surmounted unless direct commercial links can be established with European end users.

THE DYNAMICS OF DEVELOPING A NEW EXPORT INDUSTRY

The process of market identification and development: the era of laissez-faire growth

Ginger as a spice is widely consumed by Fiji's Indian and Chinese communities. Its cultivation dates back over a century, with planting material probably introduced from India. Fiji is known to have exported ginger in 1890 (Purseglove et al. 1981:510). However, it was not until the 1950s that a regular export trade began. In the beginning, this small volume was sold on consignment to Auckland's (New Zealand) produce market. The suppliers were Chinese market gardeners living in close proximity to Suva. Sales to North America began shortly thereafter and were initiated by a company called Fiji Export Agencies Ltd (FEA). FEA was a Suva-based company, established by the resident representative of the New Zealand produce company Turners and Growers Ltd. The first importer was Pacific Produce Ltd, a large west coast produce importer/wholesaler that operated out of Vancouver. Pacific Produce Ltd remains a major importer of Fiji ginger.

During the late 1950s and early 1960s, the exporting of ginger to North America proved to be highly remunerative because virtually no other source of fresh ginger existed during the Fiji season. Even during the “off-season” the market was undersupplied because Hawaii had not yet developed a significant industry.

In the 1960s, exports expanded rapidly as the Chinese grow-
ers responded to the prices received (Table 1), which encouraged new exporters to enter the trade. Initially, these exporters were a few of FEA's larger suppliers, which entered the market by offering the product at a lower price than FEA. Thus Pacific Produce Ltd had a "leap frogging" sequence of new suppliers—each offering a price lower than that of its predecessor. The displaced exporters in turn sought out wholesalers who had hitherto secured supplies from Pacific Produce Ltd. This period also saw the entry of Produce Producing Ltd as a fresh exporter. This company, which had pioneered the development of the Fiji processed ginger industry, was to become the largest exporter of fresh ginger (Table 4).

The mid-1970s saw an influx of Fijian growers into the industry, which followed the collapse of the government-sponsored Lomaivuna smallholder banana scheme in the province of Naitasiri (see map). This group now makes up about 75 percent of the mature ginger growers, cultivating about 30 percent of the area, and accounts for 25 percent of the production. This group dominates the immature ginger sector and accounts for over 90 percent of the area planted and the number of farmers. These Fijian farmers were largely settlers from the outer islands.

Table 4. Base sea-freight quota allocations to North America, 1987

<table>
<thead>
<tr>
<th>Exporter</th>
<th>Total export 1980-85 (tonnes)</th>
<th>Pro rata basis</th>
<th>Equal shares</th>
<th>Total base quota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Produce Processing</td>
<td>2,395.22</td>
<td>25</td>
<td>249</td>
<td>42</td>
</tr>
<tr>
<td>Sang Lum</td>
<td>1,755.21</td>
<td>18</td>
<td>182</td>
<td>42</td>
</tr>
<tr>
<td>Farm Produce</td>
<td>790.65</td>
<td>8</td>
<td>82</td>
<td>42</td>
</tr>
<tr>
<td>Waisali</td>
<td>946.76</td>
<td>10</td>
<td>98</td>
<td>42</td>
</tr>
<tr>
<td>Fiji Agr. Co-op</td>
<td>764.24</td>
<td>8</td>
<td>79</td>
<td>42</td>
</tr>
<tr>
<td>Balthans Int/Fiji Pack</td>
<td>1,181.51</td>
<td>12</td>
<td>123</td>
<td>42</td>
</tr>
<tr>
<td>Prog. Agencies</td>
<td>415.60</td>
<td>4</td>
<td>43</td>
<td>42</td>
</tr>
<tr>
<td>Hop Tiy</td>
<td>383.49</td>
<td>4</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>Kimble Chung Trading</td>
<td>316.51</td>
<td>3</td>
<td>33</td>
<td>42</td>
</tr>
<tr>
<td>Chang Sing Loong</td>
<td>215.43</td>
<td>2</td>
<td>22</td>
<td>42</td>
</tr>
<tr>
<td>R. D. Patel</td>
<td>210.88</td>
<td>2</td>
<td>22</td>
<td>42</td>
</tr>
<tr>
<td>Tropical Export Agency</td>
<td>243.26</td>
<td>3</td>
<td>25</td>
<td>42</td>
</tr>
<tr>
<td>Total*</td>
<td>9,618.76</td>
<td>100</td>
<td>1,000</td>
<td>500</td>
</tr>
</tbody>
</table>

a. Totals may not sum exactly due to rounding.
who needed an alternative crop to replace bananas. Their entry into the ginger industry was accompanied by substantial government support via an intensive commodity-oriented extension effort, a modest research program, and the provision of physical infrastructure (particularly for road access). Produce Processing Ltd played a major role in the successful entry of Fijian smallholders into ginger production. The critical service provided was the provision of short-term credit.

The entry of new exporters during the early development of the industry was a catalyst to growth, and the competition between exporters for supplies served the farmers’ and the nation’s interest. However, although the process of sequential price undercutting provided an effective mechanism of entry, it sowed the seeds for future marketing instability once the market became saturated. By the end of the 1960s there were far too many exporters relative to the finite North American market. In 1970 over 20 licensed exporters were shipping almost 1,000 tonnes to North America. Today 12 active ginger exporters are selling to this market, which can still be regarded as excessive (Table 4).

Prior to 1983 a license to export could be secured with the payment of a nominal fee. The exporter’s license was retained, provided quarantine standards were met. A cut-throat, free-wheeling marketing environment prevailed, where the market share was created or expanded by undercutting prices. In a situation where Fiji commanded most of the market and where the demand for the product was price inelastic, this competition meant a decline in the total revenue accruing to the industry. The marketing uncertainty created by price undercutting also led to dissatisfaction among importers with Fiji suppliers. A particular source of discontent was the practice of some small Fiji exporters entering the market well down the marketing chain, even at the retail level, as a means of securing a “foothold” in the market. These exporters often erroneously claimed they had found a “new” market for Fiji ginger when in fact all they had done was to undermine the established distribution chain.

Price undercutting became extremely serious in the mid-1980s when large growers, mainly recent immigrants from
mainland China, began exporting their own rapidly expanding production into an already saturated market. This group is referred to as grower/exporters. Heretofore, most Fiji ginger was exported by traders who purchased most or all of their supplies from farmers. The adverse effects of dumping and the associated price undercutting were compounded by lower quality standards of the large new growers. This tarnished the overall reputation of Fiji ginger at a time when competition from Brazil was increasing.

The era of government intervention and progress toward orderly marketing

By the early 1980s the lack of order in the marketing of ginger began to seriously affect the viability of the industry. Consequently, both the industry and the government moved to remedy the situation. Unfortunately, some of the government's initial efforts proved to be counterproductive.

In 1980 the exporters formed the Fiji Fresh Ginger Exporters Association (FFGEA), which all exporters except one chose to join. The FFGEA had no legal basis or power to direct the behavior of the exporters. However, it did provide a formal forum where exporters could meet and discuss common industry problems. It also provided a point of contact for the government in its discussions with the industry. The FFGEA was later to provide the catalyst for the formation of an exporters consortium for sales to North America.

Operating in parallel with the formation of the FFGEA, the government was able to gain greater legal power to regulate the industry. In 1983 by amending The Fruit Export and Marketing Act, the government restricted the entry of new exporters. The Amendment gave the Permanent Secretary of the Ministry of Primary Industries (MPI) discretionary power in issuing new licenses. The Secretary was now required to give due consideration to factors such as market availability. To obtain a license, an exporter was required to have adequate facilities to ensure quality curing, grading, and packing and to be of sound financial standing. Heretofore some exporters had entered the industry with packing sheds that were cramped and poorly ventilated.
To the credit of the government, no new ginger export licenses for North America have been issued since 1983, despite numerous applications and considerable political pressure. The officials responsible for the ginger industry now appreciate the structure of the North American market and are no longer convinced that a new buyer for Fiji ginger constitutes an expansion of the market. The Amendment to The Fruit Export and Marketing Act also allowed for conditions to be imposed on licenses; these conditions include minimum price, markets, and quantities.

In 1984 the government established a Tripartite Ginger Committee (TGC) involving the growers, the exporters (represented by FFGEA), and the government (with the Director of Agriculture as Chairman). The TGC, which meets on a regular basis during the season, represented an important institutional development. It permitted a degree of industry coordination and consultation that before had not been possible.

To counter price undercutting and to ensure fair grower returns, the government initiated minimum FOB and farm-gate price negotiations within the TGC. Adherence to the negotiated prices had been specified as part of the license conditions under The Fruit Export and Marketing Act. Market information was brought to bear on these negotiations through the exporters and (supposedly) independently via the Economic Development Board (EDB)—a statutory authority charged with the promotion of trade and investment. However, although the market figured in discussions, the negotiating process inevitably tended toward "horse trading." The exporters dominated the proceedings because of their superior organization and market information, while the marketing intelligence provided by the EDB proved to be weak.

In 1984 and 1985 the system worked reasonably well and introduced a degree of orderly marketing. However, in 1986 it failed, and the industry was thrown into a marketing crisis that threatened its very survival. Ironically, the government's effort to set minimum export prices was a major factor contributing to the instability. The problem was that the government attempted to enforce minimum FOB prices that were out-of-line with market reality. Furthermore, the government did not have the legal power that it had expected to enforce compliance; fun-
damentally, it tried to regulate prices without any control over supply.

Because of their importance, the events of 1986 are now analyzed in detail. Prior to the start of the season the TGC established minimum prices ($0.92/kg FOB and $0.40/kg farm-gate). These prices were set for the entire season. This was a significant departure from the previous two years in which adjustments were made during the course of the season in response to changing market conditions. The high prices that prevailed at the end of 1986 were the dominating factor in setting the new season’s price. It soon became apparent, however, that supply had been underestimated and that the TGC had set prices too high. The factors on the supply side were (1) the Hawaiian season extended longer than anticipated, (2) the Brazilian exports to the west coast were greater than expected (see Table 2), and (3) Fiji had enjoyed a larger crop than forecast.

The large new grower/exporters, who were faced with a surplus, decided unilaterally to ignore the agreed minimum FOB price and to sell as much of their ginger as possible. As grower/exporters they were not committed to any negotiated farm-gate price for their ginger supplies. Thus they were in a stronger position to absorb substantial price cuts than were the established exporters who had commitments to growers at agreed prices. In fact, it was apparent that the new grower/exporters were engaging in a price war as a long-term strategy to force out established exporters.

The capacity of the industry to dump ginger on the west coast in 1986 was enhanced by the above normal availability of shipping in the key month of September. Usually, ships with suitable cool storage facilities are available on a three-to-four week basis. The ginger carrying capacity of these vessels that are routed via New Zealand is around 500 tonnes, which provides a natural supply regulating mechanism. However, in September of 1986 there were three ships—two of which sailed within a week of each other. All the exporters scrambled to take advantage of this obvious over-capacity out of fear that they might be left out. Some of them gave scant regard for the quality of the product they were shipping. As a consequence, over 1,000 tonnes entered the market during September. (In the two
previous years, an amount slightly over 1,000 tonnes was seafreighted during the entire season.) This amount of semi-perishable commodity was far more than the market could absorb, which induced a downward spiral in prices as importers and wholesalers tried to clear their excessive inventory. Those exporters who tried to maintain the agreed FOB price sustained heavy losses. Their ginger was either not sold or eventually cleared at substantial discounts, which reflected a deterioration in quality due to long storage periods. These exporters were committed to pay their growers the negotiated farm-gate price although by the end of the season this was not adhered to, and prices were subject to individual negotiations between growers and exporters.

The expectation of the FFGEA was that the government would suspend or cancel the licenses of the exporters who had sold below the agreed price. The minimum FOB price was specified as a license condition. Representatives of government and the FFGEA visited the market in October 1986 to secure evidence of price undercutting. Although such evidence was indeed found, the government decided, on legal advice, not to take action. The reason was that the necessary regulations under The Fruit Export and Marketing Act had not been made to enforce the conditions of the license. Thus the season ended in turmoil—with a prevailing lack of confidence and distrust among all parties. The North American importers lacked confidence in the Fiji marketing system and indicated a desire to seek supplies elsewhere. The exporters doubted the resolve of the government to enforce the Act to ensure orderly marketing. In this atmosphere of heightened distrust and bitterness, the exporters threatened to dissolve the FFGEA.

The institutional and legal reforms of 1987

All concerned parties became convinced that the industry could not afford a repetition of the events of 1986. Order had to be introduced into the marketing system as a matter of urgency. The problem, however, was how this could be accomplished for a commodity that was handled by 12 highly individualistic traders. One school of thought was that the marketing of fresh
ginger should be handled by the parastatal statutory marketing agency, the National Marketing Agency (NMA). The argument was that a single marketing entity would eliminate price undercutting, maximize revenue for the whole industry, and enforce quality control standards. All these arguments are theoretically valid. However, the development of the ginger industry was based on the marketing skills of private traders, despite the fact that they were too numerous for the size of the market. The farmers, although suffering from price undercutting in the market place, had benefited from the competition for their ginger supplies. In contrast, the marketing performance of the NMA, like most governmental marketing bodies in the Pacific islands, had been poor. The NMA was particularly ill equipped to handle a specialized commodity like ginger. For the export commodities that it did handle, such as cocoa, its operations were inefficient and costs high. The result was high marketing margins and lower grower buying prices.

The other alternative was for the industry to get its own house in order with the government providing appropriate direction and control to ensure that the actions of the individual exporters were in the best interest of the industry. This latter course of action (fortunately) was adopted. The threat of an NMA takeover, however, served a useful function in galvanizing appropriate action from the exporters, and it probably saved the FFGEA.

As events developed, considerable progress was made in restoring order to the industry. This was all the more remarkable because 1987 was a period of unprecedented political instability with two military coups and six political administrations. The industry was confronted with a substantial reduction in airfreighting capacity to North America (Table 1). In May, Continental Airlines terminated operations through Fiji, and Air New Zealand suspended flights for the entire ginger season.

The measures that were put into place in the course of 1987 are listed as follows, and their implications are discussed below:

- The necessary regulations were made under The Fruit Export and Marketing Act.
- Based on these regulations, quotas were imposed for North America.
Fiji Ginger Industry

- The exporters formed themselves into a consortium for sales to North America.
- A system of grading, based on Hawaiian standards, was introduced.
- A pilot scheme was introduced in which growers could cure, pack, and grade their own ginger.

Regulations under The Fruit Export and Marketing Act

Just prior to the April elections, the Minister issued regulations that gave effect to the Amended Act and that set conditions for suspending and canceling licenses. These regulations meant that the conditions specified in the license, including minimum price and export quotas, could now be enforced.

Export quotas to North America

The experiences of 1986 showed that it was ineffective, and even counterproductive, to set prices without controlling supply. The rationale for introducing quotas was to stop dumping onto a price-inelastic market and to ensure a smooth flow of produce onto that market. An initial base quota of 1,500 tonnes was set for the season. This figure was a conservative estimate of the absorptive capacity of the market. The base was subsequently increased to 1,800 tonnes when the market showed that it could absorb additional sales. Quotas were distributed among exporters in accordance with their recent historical performance, with some bias toward the small exporters. The year 1986 was excluded from the calculations so as not to reward those exporters who were guilty of dumping during that time. The initial quota distribution is shown in Table 4. The imposition of quotas appears to have had the desired effect on exporter behavior and has proved to be an important catalyst for the formation of the exporters consortium.

The exporters consortium

In April 1987 the FFGEA formed an exporters consortium. The stimulus for this organization was the threat of an NMA
takeover, as well as memories of the financial disaster of price undercutting in 1986. The consortium covered all sea-freight exports to the North American west coast. The consortium selected 15 west coast importer/wholesalers (four for each major city plus one for Hawaii), who were given the exclusive right to handle Fiji ginger in North America. The designated buyers were required to handle at least 200,000 lbs (90 tonnes) of Fiji ginger for the season, which eliminated the problem of individual exporters selling directly to retailers and thereby undermining the established marketing chain.

The members of the consortium retained their individual identity including, for the time being, their own label. The FFGEA has expressed its intention to move to a common label, with the individual exporters retaining identifying marks. For any one shipment, exporters with orders in excess of their quota allocation placed them in a pool for reallocation to consortium members with insufficient orders. The consortium set a common price for all Fiji ginger entering the market. A minimum FOB price was no longer negotiated by the TGC. Thus competition among the individual exporters was now based on quality and not price.

A liaison officer, located in Vancouver, was appointed. His duties include supplying regular market information, monitoring the performance of the designated wholesalers, identifying the specific quality requirements of the market, monitoring the performance of the individual consortium members, and being on-the-spot to check any complaints made by importers. This position, in effect, was designed to be the "eyes and ears" of the Fiji exporters. The liaison officer is one of the principals of Produce Processing Ltd, which did cause some disquiet among the other exporters. However, the arrangement appears to have worked effectively.

A successful consortium brings with it the following benefits to the industry:

- A restoration and enhancement of buyer confidence. This confidence had been severely battered in recent years by unpredictable price undercutting and by the practice of the exporters selling directly to retailers and thereby undermining the marketing chain upon which the stability of North American produce markets is founded.
A common price means that the consortium can bargain a price that maximizes the returns to Fiji (from both the short- and long-term perspective). The destabilizing price wars of the past, which reduced the total income earned by the industry, can now be avoided. In 1987 the landed price of US$0.45/lb was set by the consortium at the beginning of the season and was held firm throughout the season.

Exporters acting collectively are in a stronger position to meet growing competition from Brazil and an extended Hawaiian production season than are uncoordinated individuals competing among themselves. The stable, relatively modest price of 1987 essentially kept Brazil out of the west coast during that season.

The consortium of exporters as a cartel can set the FOB price for each shipment. Once this price has been established, the grower price can be set by working backward and subtracting agreed marketing costs and margins (Appendix 2). In 1987 the TGC met after every shipment to endorse these calculations and to formally set the grower price for the next shipment. In 1987 the growers' price steadily increased throughout the season from a modest level—$0.14/lb at the beginning of the season to $0.21/lb by the end of the season. This process was assisted by successive devaluations (totaling 33 percent) of the Fiji dollar. Thus the previously unsatisfactory system was avoided (wherein exporters, growers, and government essentially "horse traded" the market selling price and grower purchase price).

The bargaining power created by the consortium means the exporters can negotiate benefits such as better freight rates and reduced packaging costs in the face of escalating prices. In 1987 the consortium negotiated an exclusive contract with a shipping line. The industry now exercises some control over the regularity of shipping and thus the flow of produce into the market. Consequently, situations as occurred in September of 1986 can be avoided. The bargaining power of the consortium could be extended to bulk purchases of fertilizer to supply growers.
The consortium can levy its membership for the overall development of the industry. The North American market liaison officer is funded by a levy. Quality enhancement and promotional activities would be an appropriate use for a levy fund.

The consortium has a crucial role to play in providing orderly marketing and stability to the industry. It has made a successful start-up despite difficult political and economic circumstances. The consortium as it now stands, however, is a fragile entity. There were teething problems in the operation of the consortium that are recognized and can be readily resolved. But more fundamental weaknesses need to be addressed. The inherent characteristic of voluntary "cartel-type" bodies is that some members tend to think they can improve their position by breaking away. They feel they can enjoy the benefits resulting from the collective actions of the group without enduring the constraints. However, as members leave, the cooperative increasingly disintegrates.

A lesson can be learned from the Hawaii industry's experience with collective action. Faced with marketing problems similar to those in Fiji, the large shippers and growers initiated the establishment of a bargaining cooperative at the end of 1984. The cooperative, known as the Hawaii Ginger Commodity Group Association (HGCGA), initially commanded the membership of all the shippers and nearly all the growers. The purpose of the HGCGA was to set selling prices and to raise levy funds for commodity promotion. For the first two years the HGCGA proved quite successful. It was able to hold prices and mount a modest, but apparently quite successful, promotional campaign. However, in 1987 the group disintegrated, partly because of Fiji's 1986 marketing problems, which are described in detail below. The 1987 Hawaiian season began with considerable quantities of extremely low-priced Fiji ginger still in the market. Superimposed on this glut were forecasts for a record Hawaii crop. Some of the growers, faced with bleak marketing projections and with the prospect of not being able to find a shipper to buy their crop, panicked and started selling directly to the market.
A situation thus developed where the HGCGA was seen to be in direct competition with some of the major shippers. Price undercutting commenced, and one of the largest shippers refused to collect a US$0.02/lb levy from the growers. Others followed suit, and the HGCGA ceased to exist as a bargaining cooperative. It now represents less than 20 percent of the growers and operates as a marketing cooperative for one of the large shippers. The industry can no longer raise funds for promotion and thus does not have access to matching funds made available by the state. This situation occurred at a time when the promotion campaign was starting to pay dividends. In the United States ginger is probably not a sufficiently large agricultural industry to be placed under a self-regulating federal marketing order as is the case of Hawaiian papaya—thereby allowing a compulsory cooperative to be formed. Furthermore, the acrimony created by the events of 1987, which include litigation, probably makes it difficult to obtain the level of industry support required to establish a marketing order.9

With respect to collective action, Fiji has a distinct advantage in that the government can impose quotas. These compulsory quotas have been a binding force for the consortium. Initially, one license holder refused to join the FFGEA, but he has now agreed to become a member under a threat of not being issued a base export quota.

The introduction of a grading system for fresh exports

A grading system, based on modified Hawaiian standards, was introduced for the 1987 season following a fact finding visit to Hawaii by a Fiji team in April 1987. Grading was a response to a sharp deterioration in the quality standards observed in 1986. In some respects, the system may have been introduced too rapidly. There the warning to farmers was inadequate, the training for extension and quarantine staff was insufficient, and the political circumstances were extremely difficult. Yet, the government with the endorsement of the TGC felt that grading should be introduced immediately, lest the momentum of industry reform be lost. Given the circumstances, the start-up grading was successful. Grading, albeit with a high rate of rejects,
appears to have led to an overall improvement in the general quality of ginger exported.

The system now pays a bonus to farmers who deliver large, plump, and clean rhizomes (designated Fiji Fancy ginger). This bonus is approximately 30 percent higher than the price paid for standard uncured ginger. (The grading standards are presented in Appendix 3 and shown in Figure 4.) Only a small quantity of ginger, involving a few farmers, received the fancy bonus during 1987. Unfortunately, only one exporter, Produce Processing Ltd actively encouraged farmers to produce fancy ginger. The company's fancy ginger was reported to be well received in the market place despite a $0.10 kg premium price that was set by the consortium.

The percentage of fancy ginger is expected to increase significantly over time as farmers gear themselves to take advantage of this incentive to produce premium quality ginger. Good quality ginger depends on the agronomic practices adopted, beginning from site selection and land preparation. Provided that appropriate incentives exist, the emphasis of farmers is expected to shift toward producing quality ginger from even
smaller areas. The squeeze toward small areas will be reinforced by the escalation in the cost of imported inputs following the successive devaluations of the Fiji dollar and by the removal of agricultural import subsidies in 1987.

An underlying weakness of the current grading system is its heavy dependence on the integrity of the exporter who is responsible for both the sorting and packing operations. The problem will be solved only when the farmers do their own curing and packing and then sell to the exporter the ginger that is ready for quarantine inspection and export. This procedure constitutes the "master farmer" concept whereby the consignment being inspected is the full responsibility of the farmer. The Hawaiian industry has always been based on this concept (Figure 5).

The "master farmer" pilot scheme

A pilot "master farmer" scheme, involving a few of the best farmers, was introduced during the 1987 season (Figure 6). Unfortunately, the largest farmer participating in the scheme suffered unacceptably high post-shipment fungus disease (fusarium) losses, which emphasize the need for closer supervision and more stringent inspection.

The "master farmer" system, if implemented correctly, would bring substantial benefits to the industry, particularly farmers. The expected results would include

- A substantial increase in the value added accruing to farmers. Under the 1987 price structure, the "master farmers" were paid approximately $0.08/lb more for their ginger (Appendix 2). This bonus is essentially the estimated labor cost incurred by exporters in sorting, curing, and packing ginger.

- A significant reduction in post-harvest breakages and losses. Ginger is currently handled in a manner and frequency that are extremely detrimental to quality. The existing system of washing, packing of field crates, and pouring ginger onto concrete floors at the exporter shed leads to an unnecessarily high level of breakages. A "master farmer" can spread out the washing operation and thus reduce breakages and losses. Ideally, a "master farmer"
would wash and cure in the same place using portable racks as occurs in the Hawaii industry (Figure 7). Under the existing Fiji system, ginger is handled an average of nine times, compared with five times for the Hawaii industry (Fiji Study Team Report 1987:22).

- Higher profits. The system is based on the principle that
Figure 6. Fiji “master farmer” pilot scheme in which farmers are responsible for their own curing.

“small is profitable.” Smaller planted areas, with a concentration on higher yields of quality ginger, can lead to more efficient input usage and thus high returns to growers. To reinforce this approach, a limit of one ha should be placed on “master farmers.”
Requirements for the future

Considerable progress was made by the industry during the course of 1987; however, it was achieved without an adequate institutional structure and legal basis. The progress thus far has relied heavily on two factors: technical assistance inputs from the United Nations Food and Agriculture Organization and, more important, the voluntary cooperation of the FFGEA, particularly the largest exporter, Produce Processing Ltd. The technical assistance has now ended. Moreover, the voluntary cooperation of the exporters can never be assumed. A permanent support structure now needs to be established if the achievements described above are to be sustained.

As an immediate measure, the exporters consortium needs to be strengthened by the formation of a limited liability company with significant financial contributions from members. The membership should be expanded to include farmers. A significant financial contribution by the members commits them to the success of the arrangements, as well as acts as a safeguard against individuals breaking away.
Furthermore, as a long-term measure, a regulatory ginger board should be put into place as soon as practical. The nature of the ginger industry is best served by private exporters and processors supplied by small farmers. The purpose of a board, composed of industry members, would be to complement and reinforce the existing private sector structure and not to replace it. It would operate in the same way as the regulatory commodity boards (coffee and cocoa) in Papua New Guinea. The functions would include

- Issuing licenses to growers, exporters, and processors. The enabling Act would spell out the conditions for securing and canceling licenses.
- Setting grading and quality standards. The enforcement of these standards would be the responsibility of a strengthened Produce Inspection Section of the Ministry of Primary Industries. The board would have the power to cancel licenses of individuals who do not achieve quality standards.
- Setting marketing margins and grower prices. This could include payments to and from a price stabilization fund administered by the board if deemed appropriate.
- Conducting market research and product promotion.
- Imposing and administering levies for industry research and other industry-wide development.
- Directing industry research. Initially, a limited funding contribution from the industry is envisaged. However, as the industry grows, it should become completely responsible for funding and directing its own research.
- Establishing and allocating any production and export quotas.
- Formulating industry policy within the confines of national development plans.
- Having the power, in the last resort, to be involved in physical marketing. However, the expectation is that it would not exercise this power.

Several studies of the industry have recommended the formation of such a board to facilitate orderly industry development, particularly with respect to marketing (Fintrac 1980, Agricul-
tural Commodities Development Committee 1983, Agricultural Commodities Committee 1985). The concept was approved in principle by the government immediately prior to the 1987 general elections. Even though implementation was overtaken by nationwide political events, the fact remains that the future of this remarkable industry still depends on whether the appropriate institutional structure and legal basis are established.
Appendix 1. THE PACKAGE OF PRACTICES OF GINGER PRODUCTION IN FIJI

1. Site Selection
   • Avoid excessively steep slopes where possible, below 15 degrees, to reduce soil erosion.
   • Avoid low, wet land to prevent wilting.
   • To minimize nematode problems, use newly cleared land if available, use a four-year rotation, e.g., ginger—dalo(taro)—cassava—fallow—ginger; avoid land previously used for bele, yams, bananas, and tomatoes.

2. Land Preparation
   • Introduce appropriate soil conservation measures—run the drains across the slope and plant double rows of pineapples on the contours.
   • July/August, dig first with manual application of poultry manure.
   • Late August, second dig, work-in poultry manure until soil is fine and loose.

3. Seed Selection
   • Select seed from healthy plants with no damaged eyes, rotten edges, or thick swelling to minimize diseases such as Fusarium and Bacterial Wilt.
   • Cut rhizomes into pieces each with at least two eyes.
   • Allow cut to heal before seed treatment.

4. Seed Treatment
   • Take full advantage of the hot-water treatment service provided for nematode control.
   • Treat seed August/September.
   • Immerse seeds at 51 °C for 10 minutes, if the time or the temperature is too low, the nematode will survive; if it is too hot or too long, the seed piece will not survive.
   • Hold seeds for at least two days after treatment. Shrinking seeds should be discarded.

5. Seeding Rate
   • Immature for processing 7.5 t/ha.
   • Mature 3.5 t.

6. Planting Timetable
• Immature. From the first week in September to end of September. Planting must be at the time advised by the extension officer to enable the systematic staggering of harvesting times for the factory.
• Mature ginger. Planting to be completed by end of October.

7. Plant Spacing
• Immature: 60cm x 15cm.
• Mature: 60cm x 20cm.

8. Method of Planting
• Plant in rows across the slope following the contour.
• Planting too deep causes root rot and elongation of rhizome; too shallow requires excessive mulching and hilling at rhizome formation stage.
• Plant in strips as a soil conservation measure; the layout of the rotational system should be planned so that the crops are planted and harvested in strips across the slope at different times.

9. Fertilizer
• The correct fertilizer in the right amount and at the right time is crucial.
Rates: Immature and mature
- Poultry manure 10 t/ha.
- NPK 13:13:21 1 t/ha.
- Urea 300 kg/ha.
Timing of Application
- Poultry manure to be dug in at the time of preparation (July/August).
- NPK ½ application at the time of planting, the remainder to be applied three months after planting.
- Urea as a top dressing for immature; three applications (4th week of October/4th week November/4th week January); for mature four applications (spread over Oct.–Feb.).

10. Weed Control
• Good land preparation prevents major weed problems.
• Weed control should be complemented by correct chemicals. A uniform layer of the chemical is sprayed on the surface of the soil; with good land preparation, this application should prevent any weed growth for about two or three months.

11. Hilling
• Hilling helps control weeds and enhances rhizome development, which is particularly necessary on slopes to replace eroded soil at base of plants.
Fiji Ginger Industry

• Immature—two hillings (November and December).
• Mature—three hillings (between November and February).

12. Harvesting

• Immature, 6-month crop, from mid-February to early March depending on the time of planting. A 24–26 week growing period is crucial—with too short a period, yields significantly decline; with too long a period, fiber content goes above the 40 percent permitted. MPI officers advise on the timing of harvesting after conducting a fiber test.

• Mature (10-month crop) harvesting starts in July and continues until October.

13. Post-harvest handling

• Rhizomes must be washed until clean before packing and taking to the exporter shed.

• Prompt delivery is essential to avoid shrinkage with immature ginger, as well as rotting and breaking of mature ginger.

• Care needs to be taken to minimize breakage. Broken rhizomes will be rejected for the North American market “fancy” grade.

• Exporters should give prompt attention to ginger curing on arrival at the packing shed; undue delay results in an increased reject rate.

• Curing should be for at least five days, undertaken on curing racks. Exporters are required to provide sufficient curing, packing, and storage space to minimize post-harvest losses due to breakage.
## Appendix 2. GINGER MARKETING MARGINS AND EXPORT PRICES TO NORTH AMERICA, 1987

### Exporter costs

<table>
<thead>
<tr>
<th>Item</th>
<th>30lb Carton</th>
<th>Per lb</th>
<th>&quot;Master farmer&quot; costs</th>
<th>30lb Carton</th>
<th>per lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carton</td>
<td>$2.75</td>
<td>.092</td>
<td>$1.71</td>
<td>.057</td>
<td></td>
</tr>
<tr>
<td>Labor</td>
<td>$1.80</td>
<td>.060</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labels &amp; staples</td>
<td>$0.11</td>
<td>.004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fumigation</td>
<td>$0.30</td>
<td>.010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection fee</td>
<td>$0.03</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shed hire</td>
<td>$0.50</td>
<td>.017</td>
<td>$0.45</td>
<td>.015</td>
<td></td>
</tr>
<tr>
<td>Cartage</td>
<td>$0.19</td>
<td>.006</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td>$0.15</td>
<td>.005</td>
<td>$0.14</td>
<td>.005</td>
<td></td>
</tr>
<tr>
<td>Insurance</td>
<td>$0.15</td>
<td>.005</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contingency</td>
<td>$0.15</td>
<td>.005</td>
<td>$0.14</td>
<td>.005</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$6.38</td>
<td>$0.213</td>
<td>$2.3</td>
<td>$0.08</td>
<td></td>
</tr>
<tr>
<td><strong>Freight</strong></td>
<td>$5.44</td>
<td>$0.18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### FARMERS PRICES FOR DIFFERENT CONSORTIUM FOB SELLING PRICES

#### CONSORTIUM PRICE (standard grade)

<table>
<thead>
<tr>
<th>US cents/lb</th>
<th>34</th>
<th>35</th>
<th>36</th>
<th>37</th>
<th>38</th>
<th>39</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiji cents/lb</td>
<td>43</td>
<td>44.5</td>
<td>45.7</td>
<td>46.9</td>
<td>47.2</td>
<td>49.5</td>
</tr>
</tbody>
</table>

#### EXPORTERS COSTS

- Marketing costs: 21.3
- Exporter margin (15% FOB): 5.1

#### FARMER PRICES (cents/lb)

- **Uncured**
  - Standard: 16.7, 17.8, 19.0, 20.1, 21.8, 22.3

- **"Master Farmers"**
  - Standard: 24.4, 25.5, 26.6, 27.8, 28.9, 30.0
  - Fancy: 30.5, 31.9, 33.3, 34.7, 36.1, 37.5

(continued)
<table>
<thead>
<tr>
<th></th>
<th>35</th>
<th>36</th>
<th>37</th>
<th>38</th>
<th>39</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Uncured</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Standard</td>
<td>17.0</td>
<td>17.5</td>
<td>18.0</td>
<td>18.5</td>
<td>19.0</td>
</tr>
<tr>
<td>- Fancy</td>
<td>22.0</td>
<td>22.5</td>
<td>23.0</td>
<td>23.5</td>
<td>24.0</td>
</tr>
<tr>
<td><strong>&quot;Master Farmers&quot;</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Standard</td>
<td>30.0</td>
<td>30.5</td>
<td>31.0</td>
<td>31.5</td>
<td>32.0</td>
</tr>
<tr>
<td>- Fancy</td>
<td>37.5</td>
<td>38.0</td>
<td>40.0</td>
<td>40.0</td>
<td>40.0</td>
</tr>
</tbody>
</table>
Appendix 3. QUALITY GRADING STANDARDS FOR FIJI GINGER

Two grades apply to fresh ginger exports from Fiji: Fiji Fancy and Fiji Standard.

<table>
<thead>
<tr>
<th>Fiji Fancy</th>
<th>Fiji Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similar varietal characteristics.</td>
<td>Similar varietal characteristics.</td>
</tr>
<tr>
<td>Well matured, dry, clean, firm, compact, plump, and uniform</td>
<td>Well matured, dry, clean, firm, compact, plump, and uniform</td>
</tr>
<tr>
<td>Free from:</td>
<td>Free from:</td>
</tr>
<tr>
<td>Soft rot and other decay, break down, wormholes, discolored flesh, sprouts, shriveling, sunburn soil, insects, diseases, and rootlets</td>
<td>Soft rot and other decay, break down, wormholes, discolored flesh, sprouts, shriveling, sunburn soil, insects, diseases, and rootlets</td>
</tr>
<tr>
<td>Cuts, breaks, tears, bruises, skin cracks, mechanical, or other means</td>
<td>Cuts, breaks, tears, disease, skin cracks, growth cracks, mechanical, or other means</td>
</tr>
<tr>
<td>Weight and size requirements:</td>
<td>Weight and size requirements:</td>
</tr>
<tr>
<td>16 ounces minimum.</td>
<td>8 ounces minimum.</td>
</tr>
<tr>
<td>May consist of whole rhizomes with no broken pieces smaller than 5.5 inches in length</td>
<td>May consist of up to 20 percent broken rhizomes provided at all times the pieces are not less than three inches in length</td>
</tr>
</tbody>
</table>

All ginger for export must be cured for a period not less than five days.

Tolerance Requirements

Quality Tolerance: 15 percent by weight, provided not more than 7.5 percent damaged. No rot soiled and/or severely damaged ginger permitted. This applies to both grades.

Size Tolerance: 10 percent by weight of contents not satisfying the specified minimum weight or length, provided the rhizomes are plump and clean.

NOTES

1. Detailed background to the world ginger market is provided in Anand 1982.

2. The estimations of trade in various categories of ginger are made difficult by inadequate disaggregation and inconsistencies in published ginger trade statistics. The difficulties are detailed by Anand as follows:

   Under the Standard International Trade Classification (SITC) Rev. 2, ginger is mentioned specifically only as a spice, as follows:

   SITC No. 075.26 Ginger (excluding ginger preserved in sugar or conserved in syrup). This category would seem therefore to include both fresh and dried ginger and, furthermore, as there is no specific exclusion, ginger provisionally preserved (for example in brine) may also be included in this category. Generally preserved and crystalized ginger are classed as fruit, and appear as such under SITC No. 058.2 and SITC No. 058.99. Some countries, unfortunately, interpret the classification differently; Hong Kong, for instance, identifies fresh and chilled ginger, provisionally preserved ginger and ginger preserved in syrup or crystalized as vegetables, under SITC No. 054, and in this case only dried ginger appears under SITC No. 075.26. Within these systems of classification (or the similar BTN system), moreover, countries may work to a higher level of aggregation or adopt their own subclassifications (Anand 1982:17).

   There is also ambiguity in the units of measure used when dried and fresh ginger are combined in SITC classification statistics. The conversion ratio of fresh to dried ginger averages about 1:6, with considerable variation depending on variety.

   Thus the ginger trade estimates presented in this section of the study are approximations based on the knowledge that major exporters generally tend to specialize in particular categories of ginger. Examples are dried ginger (India, Nigeria, and Jamaica), preserved (Hong Kong, China, and Australia), and fresh (Hawaii, Fiji, and Brazil). There are, however, troublesome exceptions such as Taiwan, which is a significant exporter of both fresh and preserved ginger. The trade estimates, unless oth-

3. Personal communication with the President of Mauna Kea Agro-nomics. This company is Hawaii’s largest ginger exporter and a supplier of fresh ginger to McCormick Spice Company for the manufacture of puree.

4. After ginger is harvested it is washed (Plate 2). In Fiji it is then delivered to the exporter shed for curing before it is packed. Curing involves spreading the ginger on racks, or on the floor, in a dry open space with good circulation. It is then left to dry (cure) for a minimum of five days. After curing, if fungus borne diseases do not become apparent, the ginger is ready for grading, packing, and shipment. In Fiji the farmers are paid for washed uncured ginger, while in Hawaii they are responsible for curing, grading, and packing (Plate 5). It is proposed that Fiji move toward the Hawaiian system (see section on “master farmer” pilot scheme).

5. Personal communication with the Assistant Director of Agriculture (Extension), Fiji’s MPI.

6. Subsequently renamed the Fiji Trade and Investment Board.

7. A comparison of Fiji and Papua New Guinea growers and FOB cocoa prices provides strong evidence of the adverse effects of state monopoly marketing on grower returns. The Papua New

### Table F7. Fiji and Papua New Guinea prices, 1982–86

<table>
<thead>
<tr>
<th>Year</th>
<th>Fiji FOB value ($)</th>
<th>Fiji Grower price ($)</th>
<th>Papua New Guinea FOB value (K)</th>
<th>Bounty payment ($K)</th>
<th>Grower price ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>1,514</td>
<td>1,250</td>
<td>1,188</td>
<td>500</td>
<td>1,566</td>
</tr>
<tr>
<td>1983</td>
<td>1,922</td>
<td>1,250</td>
<td>1,335</td>
<td>370</td>
<td>1,660</td>
</tr>
<tr>
<td>1984</td>
<td>2,490</td>
<td>1,500</td>
<td>1,897</td>
<td>86</td>
<td>1,890</td>
</tr>
<tr>
<td>1985</td>
<td>2,453</td>
<td>1,500</td>
<td>1,978</td>
<td>135</td>
<td>1,963</td>
</tr>
<tr>
<td>1986</td>
<td>2,192</td>
<td>1,700</td>
<td>2,013</td>
<td>123</td>
<td>2,010</td>
</tr>
</tbody>
</table>
Fiji Ginger Industry

Guinea Cocoa Marketing system is highly competitive—albeit regulated. In Fiji only the NMA is permitted to market cocoa.

8. For instance, all the designated importers of Fiji ginger were required to import a minimum of 200,000 lbs to be retained as Fiji importers. These figures proved to be unrealistic for the small importers who traditionally had handled much smaller quantities of ginger. The designated San Francisco buyers apparently created particular problems. To exceed the 200,000 lb minimum, these buyers needed to handle considerably more ginger than their normal requirement. Their surplus-to-normal requirement was "dumped" in Los Angeles at prices equivalent to the purchase price from Fiji. San Francisco creates difficulties because unlike Los Angeles, it is not a distribution city. These small importers will either have to be dropped or be given minimum requirement quotas in accordance with their historical performance.

9. Obtaining a federal marketing order for an industry is a protracted process, the initiative for which must come from the industry itself. For the order to become law, it must have the support of two-thirds of the handlers and 50 percent of the growers or two-thirds of the grower volume handled.
REFERENCES

Agricultural Commodities Committee

Agricultural Commodities Development Committee

Anand, N.

Commonwealth Secretariat
1987 Fruit and Tropical Products. London.

Fiji Study Team Report

Fintrac International

Government of Fiji
Ministry of Primary Industries. Annual Reports (various issues).
Ministry of Primary Industries. Circular to Ginger Exporters. 28 July 1987 (mimeo).
Ministry of Primary Industries. Quarantine Division Annual Reports (various issues).
Bureau of Statistics Annual Trade Reports (various issues).
Marutani, Herbert K.

McGregor, Andrew

McGregor, Andrew

Purseglove, J. W., Brown, E. G., Green, C. L., and Robbins, S. R. J.

United States Department of Agriculture (USDA)
The Pacific Islands Development Program (PIDP) at the East-West Center helps meet the special development needs of the Pacific islands region through cooperative research, education, and training. Its quality in-depth research provides island leaders with information on alternative strategies to reach development goals and meet the needs of the island peoples.

PIDP serves as the secretariat for the Pacific Islands Conference, a heads of government organization, and for the Standing Committee, composed of island leaders. PIDP's projects—requested and reviewed by the Standing Committee—respond to the development themes discussed at the First (1980) and Second (1985) Pacific Islands Conference. This process is unique within the East-West Center and in other research and educational organizations serving the Pacific.

The East-West Center is a public, nonprofit educational institution established in Hawaii in 1960 by the United States Congress. The Center's mandate is "to promote better relations and understanding among the nations of Asia, the Pacific, and the United States through cooperative study, training, and research."

Some 2,000 research fellows, graduate students, and professionals in business and government each year work with the Center's international staff on major Asia-Pacific issues relating to population, resources and development, the environment, culture, and communication. Since 1960, more than 25,000 men and women from the region have participated in the Center's cooperative programs.

Principal funding for the Center comes from the U.S. Congress. Support also comes from more than 20 Asian and Pacific governments, as well as private agencies and corporations. The Center has an international board of governors. President Victor Hao Li came to the Center in 1981 after serving as Shelton Professor of International Legal Studies at Stanford University.