OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as "developed", "industrialized" and "developing" are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

D02892

Distr. LIMITED

ID/WG.88/17
10 September 1971

ORIGINAL: ENGLISH

United Nations Industrial Development Organization

Expert group meeting on processing selected tropical fruits and vegetables for export to premium markets

Salvador, Bahia, Brazil, 25 - 29 October 1971

SOURCES FOR CANNED PINEAPPLE[1] IN INTERNATIONAL TRADE - RECENT TRENDS

by

Jehuda Abraham
Industries Development Corporation Ltd
Haifa, Israel

1/ The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO. This document has been reproduced without formal editing.

id.71-7204

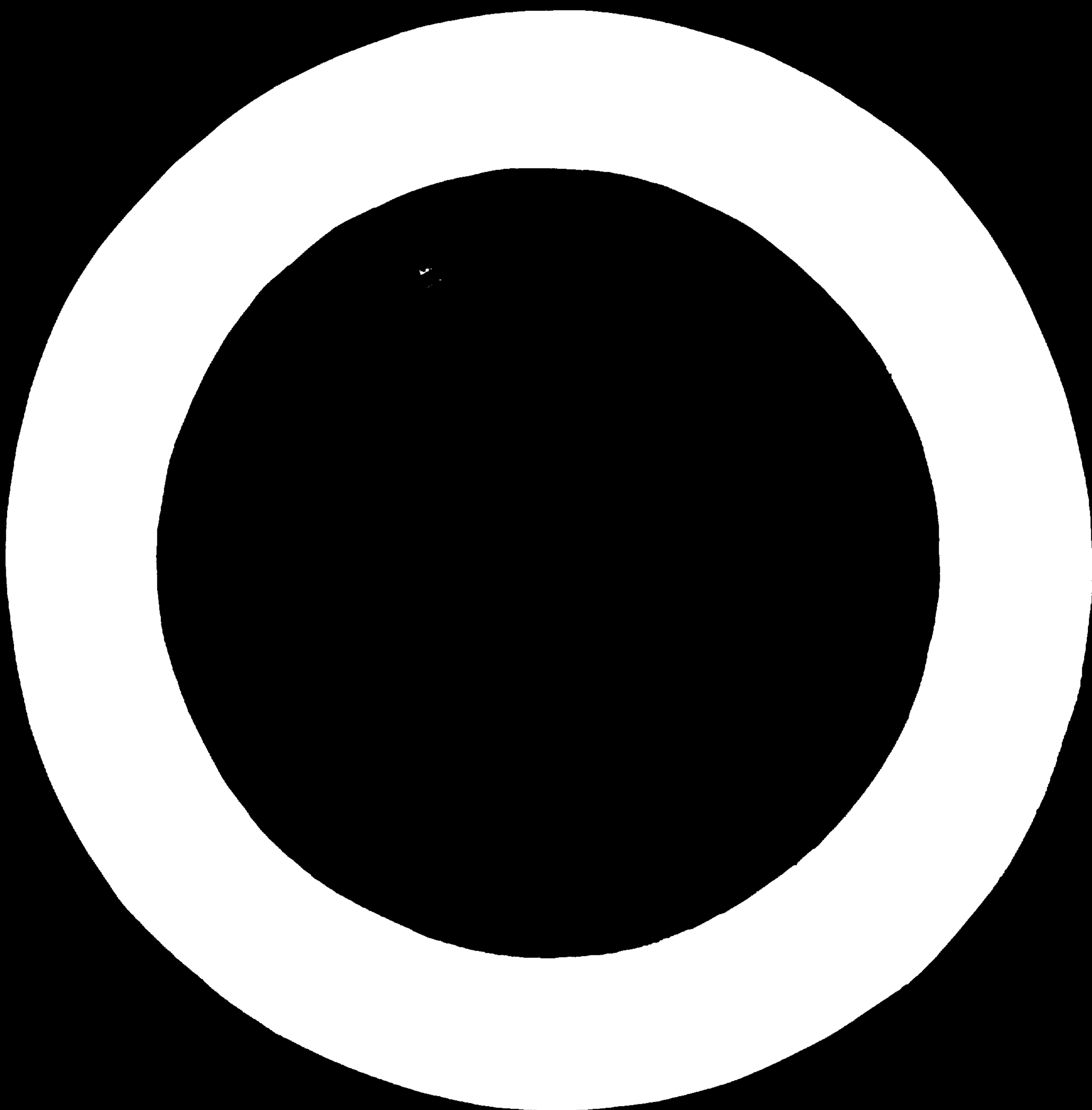

TABLE OF CONTENTS

1. INTRODUCTION

During recent decades, and especially since the end of World War II, international trade of processed fruits and vegetables has undergone an increase in volume which amounts to a qualitative transformation in the nature of international specialization and trade. Of leading importance in this trend has been the rapid continued expansion of trade in processed, primarily canned pineapple.

Among the factors influencing the rapid rise of pineapple as an internationally traded item one may count a variety of factors which include:

- comparatively high per acre monetary returns
- growing demand in world markets as a result of rising affluence in certain countries
- the ever expanding need for 'hard' foreign currency associated with industrialization of the developing countries
- the large and growing supplies of low wage labour in certain countries
- the development and general availability of modern production, processing and marketing techniques and the relatively low cost of overseas shipping

Canned pineapple moving in world trade from the major producing countries totaled in 1969 about 18 million cases per annum+, compared to about 9 million such cases per annum on the average during the period 1954-1958.

+ All references, unless otherwise indicated in this paper, are to cases containing 24 cans of size 2.5 or its equivalent.

Most of this growth has been coming from a limited number of producing countries, which includes the Republic of China (Taiwan) and Malaysia, both of which accounted for about one half of this trade growth. Today, these two countries are first and second exporters of canned pineapples in the world, trailing closely behind the U.S.A. in terms of total production. While the total of psocessed pineapple moving in international trade has been growing, not all suppliers have shared equally in this growth.

The most notable aspect of this trend is the relative and absolute decline of the U.S.A. (Hawai) as a major source of internationally traded processed pineapple. Recently new sources in Africa and Asia have been sharing the growth of trade not only to the exclusion of this major supplier but also pushing the U.S.A. product off the international market.

The major reason for this rapid and radical shift has been the emergence of an efficient labor intensive pineapple processing industries in low-wage countries.

2. SUMMARY AND CONCLUSIONS

2.1 Competitive position of source countries

A careful analysis of the elements which make for a strong competitive position in the international trade of processed pineapple products reveal a certain superficial similarity in resource endowment of the leading source countries.

The general pre-requisites include:

- Climat and soil conditions suitable for pineapple cultivation which are to be found between the latitudes 25° North and South of the Equator and an annual precipitation range from 60 to 255 cm. with an ideal range from 100 to 150 cm.
- An agriculture structure which combines suitable technology with given cultivation conditions and the availability of relatively inexpensive labor. The raw material supplier, whether cannery owned or independent, large or small, must be able to provide large quantities on a reliable schedule at low stable prices.
- A processing industry which is able to produce a uniform high grade product with a technology which minimizes production cost primarily by minimizing labour unit costs.
- Maximum industry government cooperation for efficient product quality control a d export marketing efforts.

While it would seem that the pre-requisites are present in quite a few countries, it turns out that success in competing on the international market derives primarily from the most efficient coordination and utilization of the above mentioned factors. Thus, while certain countries possess similar endowments in terms of climat, soil and an abundant inexpensive labor supply, some of these countries excell in processing and exporting pineapple while other potential sources are less successful in this field. The most general statement on the subject would therefore indicate that a certain entrepreneurial leadership combined with the suitable necessary resources is the determining factor which produces the decisive competitive edge through the optimal utilization of given factor endowment.

In this connection it is worthwhile to note that leading sources for processed pineapples on the international market exhibit certain common trends and characteristics:

- An increasing share of raw material is supplied from large estates.
- A tendency toward a stable contractual relationship between the raw material supplier and the cannery e.g. culminating in cannery owned large agricultural estates.
- The Australian example not withstanding, the leading suppliers to the international market utilize labor intensive outdated processing technology, so as to utilize to the fullest the advantage of an inexpensive labor supply.
- Strong processers associations which permit elimination of competition by different firms from the same country on the international market. Such marketing boards are usually government sponsored and assume a leading role in implementing quality control standards, assurance of price stability to growers and processers and provision of shipping, distribution and advertising facilities overseas.

Though the subject requires detailed analysis, it seems thus clear that the application of the latest processing technology has not, as yet, been able to counterbalance the advantage of a processing industry utilizing inexpensive abundant labor.

2.2 Consumption patterns

While the consumption of canned pineapple is growing steadily throughout the affluent markets of North America, Western Europe and Japan, per-capita consumption trends are by no means uniform. Up to a certain level per-capita consumption increases with the increasing availability of discretionary income. Thus, one may expect a continuing long term secular growth in the total demand for canned pineapple as more economies in West and East Europe, as well as other parts of the world, attain a certain level of affluence. However, a comparison of North American and West European per-capita consumption statistics seems to indicate that after reaching a certain level of per-capita consumption, the continued growth of such consumption is not tied to the growth in the per-capita G.N.P., average annual income level or such similar affluence indicators.

A tentative search would seem to suggest that the most important single reliable indicator regarding the future per-capita growth in the consumption of canned pineapple is culturally motivated and finds its most relevant expression in the consumption of fresh fruits. Thus, countries which have traditionally been consuming large per-capita quantities of fresh fruits - both domestic and imported - exhibit an as yet continuing growth trend in the per-capita consumption of exotic imported canned fruits of which the pineapple is probably only the first example.

By comparison, countries which have traditionally consumed relatively low per-capita quantities of fresh fruit have shown an equally low propensity to increase the per-capita consumption of canned pineapple. In these latter countries the per-capita consumption of canned pineapple has been stagnant or even decreasing during the last decades. The prime example for the first category is probably the West German market whereas the U.S.A. is probably the leading example of the latter category.

The subject requires no doubt detailed statistical investigations. It is further complicated by the growing competition of fresh pineapple which is probably competing directly in the affluent economies with certain sections of the market for canned pineapple.

Regarding pineapple juice the picture is at present quite different. Whereas the US consumer has been used for years to consume relatively large quantities of pineapple juice, either straight or blended, such juices are relatively new on the West European market. It is however safe to assume that pineapple juice will eventually achieve per-capita consumption levels in Western Europe equal to, or exceeding, U.S. levels.

There are few statistics available on the consumption of pineapple juices, concentrates and frozen products. One may however generalize and conclude that the consumption of these "new" items will somehow be a function of the consumption of canned pineapple.

though the ratios may differ under different cultural conditions. In this, as in some other areas mentioned in these pages, detailed research and analysis may prove worthwhile.

3. SOURCES

The following data is intended to provide a general picture the major trends discernable and t e leading sources for canned pineapple in international trade.

3.1 U. S. A.

In recent years the Hawaian industry experienced an erosion of its market position, in Europe, Canada and other areas, as wel as its own domestic market. The decline of USA suppliers is summarized in the following figures:

USA canned pineapple trade balance 1963-1968
(1,000 of cases)

Year/direction	US Exports	US Imports	Net US Imports
1963	1,923	2,579	656
1964	2,444	2,941	497
1965	2,229	3,438	1,209
1966	2,025	3,753	1,728
1967	1,504	4,348	2,844
1968*	1,400	5,600	4,200

* Estimates

As these figures clearly indicate, US exports underwent a sig nificant decline during this six years period from 1.9 million to 1.4 million cases. During the same period however, US imports about doubled from 2.6 to 5.6 million cases. The result is a net increase in imports of some 600%: from 656 thousand cases in 1963 to over 4.2 million cases in 1967.

Thus, within the last decade the USA has completely reversed its traditional role in world markets: from a position of leadership in the export of canned pineapple, the US by the end of the 1960's has become the world's leading importer of canned pineapple. This trend continues.

The foreign country that has been most responsible for this rise of US imports and the decline of US exports has been Taiwan. Apart from quality considerations, which no doubt are of great importance, the most important cause for Taiwan's success in penetrating the USA market has been its cost structure, based on low cost farm and cannery labor. The following table provides a good indication of Taiwan's cost advantage in the US market compared with other sources in developing countries.

<u>Relative cost of imported canned pineapple in the USA, 1967</u>

Country of Origin	Value per case (24 x 2.5) F.A.S. U.S.$
Taiwan	4.56
Philippines	4.67
Malaysia	5.18
Mexico	5.39

Taiwan has reached the American market in a round about fashion. Initially exports have been directed to western Europe, especially the West German market, in which Taiwanese exports have been successful in replacing the USA, as a main supplier.

During the 1954-58 period the USA provided about one half of all canned pineapple imports to West Germany, by 1962 even though West Germany purchases from the US' reached a five year high of nearly 1.3 million cases, the USA share of the market decline to 36%. There after the US product lost groond rapidly, and by 1968 US exports accounted for a mere 13% of a total import of 3.5 million cases into West Germany. Similar developments have been taking place throughout European markets. The Netherlands, for instance, which imported about half its 342 thousand cases in 1962 from the USA, imported in 1968 some 467 thousand cases of which only 17% originated in the U.S.A. The balance of canned pineapple imports into the Netherlands came primarily from the Philippines - 36%, from Taiwan - 24%, and from the Ivory cost - 19%.

3.2 TAIWAN

Taiwan is today the world's leading exporter of canned pineapple. The country is relatively a newcomer to the trade. After World War II, Taiwan had practically no pineapple industry to speak of, it is thus instructive to analyze Taiwan's industry in some detal.

Raw material production is centered on the Southern part of the island. Taichung, the most important area, produces close to 40% of the country's production. In addition 25% are grown in the east coast, with the Kaohsiung areas producing another 15%. Production on the east coast is expanding rapidly and should equal Kaohsiung's production in a few years. 15% to 20% of the production is grown on large cannery owned plantations. Practically all of the remaining 80% comes from small plots averaging 2.5 acres. The pineapple variety grown in Taiwan is most often the Smooth Cayenne.

Yields have been increasing steadily with the expanding use of fertilizers, past control and higher density of planting - 16,000 plants per acre is not uncommon.

Two crops are usually harvested from each plant. Planting is most often done during August-September. First harvest is approximately 24 month later and the second, 36 month later. About half of the crop is packed in the summer with the balance being split about even between spring and winter. In an attempt to spread out the harvest season, plants are often treated with calcium carbide or sodium naphtaline (acetic acid), both of which affect the time at which the pineapple matures.

The production of canned pineapple for export in Taiwan is regulated jointly by government and industry. Annual production targets for export and cannery production quotas are determined in advance by a governmental industry commission. Plantation production in eastern Taiwan is reserved for owner canneries. Other pineapple production in the East is alloted to the various canneries by agreement. Western Taiwan pineapple not covered by agreement is purchased by the "Cannery Association" and distributed according to production capacity, export record, and results of previous year export quality control inspections. Minimum grower prices are established by the government.

As indicated in the table below, production of export-trade pineapple has increased substantially throughout the 1960's; from 1.9 million to 4.4 million cases in 1969. Some 80% of total export is in consumer size packaging.

<u>Exportable production and actual exports of canned pineapple from Taiwan - 1960 to 1969 - (1,000 cases)</u>

Year/category	Exportable production	Exports
1960	1,924	1,865
1961	2,424	2,607
1962	2,396	2,299
1963	2,055	2,364
1964	3,664	2,913

Exportable production and actual exports of canned pineapple from Taiwan - 1960 to 1969 -(1,000 cases) (Contd.)

Year/category	Exportable production	Exports
1965	3,712	3,744
1966	4,265	3,817
1967	3,576	3,905
1968	3,896	3,790
1969	4,434	--

As can be seen from the above data, Taiwan canners have been able to export at levels which very significantly from actual production volume. This ability is no doubt related to the Government industry cooperation in export matters. Thus unanticipated production records do not result in damaging cut-throat competition and increasing demand does not result immediately in rising prices. The reliability of the Taiwanese source both in terms of quality, volume and price is a result of this close cooperation and regulation of the export trade by Government and industry and contributes no doubt to the continued growth of Taiwan's exports.

All this however would not be possible without the basic low prices of Taiwan's canned pineapple.

Generally it is assumed that Taiwan's low labor cost are responsible for this cost advantage. It must however be realized that this advantage is dependent upon the efficient application of the most suitable labor intensive technology both in farming and in processing. Thus, the utilization of labor intensive technolo-

-gies has two important cost advantages, on the one hand investment in machinery and equipment is kept at a minimum and, on the other hand the cost of production is also kept at low levels. The major pitfall of such strategy could be a deficiency in the uniformity and quality of the final product. In this area both industry and government have proven themselves strict and conscientious in applying suitable quality inspection techniques. Realizing full well that the future growth and profitability of the industry depend on these factors.

The results are most obvious in U.S. import figures which have increased from 429 thousand cases during 1960 to close to 1.9 million in 1968.

USA imports of canned pineapple from Taiwan, 1960 to 1968

Year	1,000 of cases
1960	429
1961	640
1962	889
1963	996
1964	1,292
1965	1,523
1966	1,794
1967	1,838
1968	1,878

It should be noted that Taiwan's exports of canned pineapple have been growing at a slower rate toward the end of the decade.

Part of this decline is due no doubt to the scarcety of raw material for the canneries. Taiwan's export of fresh pineapple to the neighbouring countries have been growing significantly during recent years.

The long term outlook for the Taiwan pineapple industry is not clear. While in the medium and short term exports will probably continue to grow, even if at a slower pace, there is little doubt that the growing demand for pineapple in the affluent marketsof Europe, Japan and North America will keep attracting more competition from the developing countries in Asia, Africa and Latin-America.

The key factor in the future will most probably continue to be a large supply of low cost labor. With the continuing industrialization and rising standard of living in Taiwan, one may assume with a certain level of confidence that Taiwan's labor costs are bound to rise. To the degree that labour cost will rise above such cost in other pineapple growing countries, Taiwan may lose its present advantage. This general projection is, of course, based on the assumption that these competitors will be as efficient and successful as Taiwan has been in utilizing this advantage properly and organizing cultivation, production and marketing as well as the people of Taiwan have been able to do in recent years. If such developments do occur, it would seem that a shift to expensive labor saving machinery, all other things been equal, is of no avail.

A technologic development which will provide new modern machinery and equipment at prices and at an efficiency level which will permit competition against low cost labour, will of course change this picture.

There is, however, little doubt that at present Taiwan is leading the world in the efficient utilization of given resources to produce a quality product at the lowest price.

3.3 MALAYSIA

Next to Taiwan, Malaysia is one of the most important new sources of canned pineapple on the world market. Total exports in 1968 reached 3.5 million cases compared to 1.5 million cases in 1963. Unlike the pineapple processing industry in Taiwan, the Malaysian industry is not a new factor in the international market. Before the Second World War, the Malaysian Peninsula was an important source of canned pineapple in international trade. During Japanese occupation the industry was almost completely destroyed, as a result, almost all the present processing capacity has been installed in the post-war era.

The industry is based on the Singapore Spanish pineapple variety which weightes from 2 to 4 pounds and is characterized by good colour and flavour. The main disadvantages of this fruit are deep irregular eyes which cause considerable wastage in canning and the relatively low acid content of the fruit.

The Malaysian processing industry obtains the raw material from two distinct types of agricultural organization:

- The cannery estates which are company owned and comprise hundreds of acres.
- Family owned small holdings of a few acres which are usually worked by the owners.

Slightly more than a half of all pineapple acrage is in cannery estates. to qualify for government registration, each cannery must own a minimum of 1.500 acres of land for pineapple cultivation. Yields per acre have been rising steadily indicating a sustained effort on this front.

The cannery estates provided a disproportioned share of the fruit for the industry: about two thirds, while the fruit from the small holders is partly sold on the fresh market. It is note worthy that in Malaysia, as in Taiwan, the processing industry does not relv solely on small holders for raw material. Every significant processor is also a significant cultivator of raw material.

Geographically, pineapples for canning are grown mainly in the states of Johore Selangat and Perak. Cultivation is concentrated in the low land peat areas since pineapples have proved to be the most satisfactory crop for these soils. However, such areas suffer from drainage problems. The spongy nature of the soil has been one of the major determining factors in the retention of manual cultivation techniques even on larger plantations.

The pineapple processing industry is labor intensive and technically less modernized and efficient than the Taiwanese industry.

In recent years government and industry have been cooperating in a number of important areas which include: standards definition and quality control, raw material price stabilization, cooperation in export drives, including uniform labeling; provision of working capital especially to permit stock piling and the creation of a price stabilization fund. Most of these measures are standard practice in Taiwan.

3.4 SOUTH AFRICA

The growing demand for pineapple in world markets has stimulated the growth of the pineapple processing industry in South Africa, which exported in 1968 close to 2.5 million cases compared with 1.9 million in 1963. The industry has been hampered by raw material supply instability. During the early 1960's slump in world prices the industry paid as little as twelve Rands per Ton for fresh pineapple. As a result, much of the pineapple land was abandoned or turned over to livestock. During the last decade, cultivation of pineapple has not only grown in total acreage, but has been marked by a trend toward larger units of cultivation. These larger units are usually not owned by the canneries, however the growers produce fruit under contract with the cannery.

Both the Smooth Cayenne and Queen varieties are grown in South Africa. The canning industry uses almost exclusively the Smooth Cayenne. Although the Queen is superior in colour and flavour, it has the disadvantage of low yield per acre and higher wastage during canning. Problems of yield per acre have been plaguing the industry and considerable research has been carried out to increase yields. Utilization of fertilizers and close spacing of plants have recently resulted in improved yields.

The processing industry in South Africa is characterized by two types of plants: large canneries, which produce packs of uniform quality consisting of a high proportion of choiced grade fruit, and smaller canneries which process several other fruits as well as pineapple.

The smaller canneries process a standard grade pack containing a high proportion of tidbits which are sold cheaply on the export market.

Like Malaysia, South African exports have been originally directed to the U.K. market. However, most of the export growth in recent years has been directed at other West European countries, especially the Federal Republic of Germany. In addition, South Africa has been successful in penetrating North American markets. Shipments to Canada and U.S.A. have been rising steadily, with the U.S. market absorbing close to half a million Dollars of processed South African pineapples in 1970.

3.5 THE PHILIPPINES

The pineapple canning industry in the Philippines is in many important aspects quite different from the Taiwanese and Malaysian industry. Although pineapples are widely grown throughout the Philippines, both for domestic use and for processing, cultivation is mostly by small holders with low yields resulting from very little attention. Smooth Cayenne is the variety most widely grown for processing. The only areas of commercial plantations for processing are in the provinces of Bukidnon on Mindanau. The processing industry is dominated by American firms (the California Packing Corporation and the Dole Corporation of Hawai).

Exports of canned pineapple have grown rapidly during the mid-sixties, reaching 2.4 million cases annually, compared with 1.6 million cases in 1963. Much of this growth has been directed at West European markets, especially the Netherlands and the German Federal Republic. However, the U.S.A. which has for many years provided the chief market for Philippines exports, continues to absorb a major share of the total pineapple export trade.

3.6 MEXICO

Mexico is one of the few major exporters of canned pineapple which also consumes significant quantities of its fresh pineapple output. Thus, the canning industry has been able in recent years to process only about 50% of the output of fresh fruit. The long term trend indicates a rise in the proportion of fruit obtained by the processing industry. Not all of the fresh fruit is consumed on the local market; a major part is exported fresh to the U.S.A.

The variety most commonly cultivated in Mexico is the Cayenne Lisa which serves both the fresh market and the processing industry.

Unlike Taiwan which has developed pineapple cultivation primarily for the processing industry and has only recently begen significant exports of fresh fruits to neighbouring countries and Japan; the Mexican industry has always had to contend with the competition of the fresh fruit market at home and abroad.

The difference is not merely of historical significance, agricultural production of pineapple in countries like Tawian is geared for the processing industry both in terms of technique and economics, whereas in Mexico the processing industry had to adapt itself largerly to the processing of surplus fresh fruit. It would however be misleading to assume that the Mexican pineapple processing industry is today merely an outlet for surplus fruit from the fresh market. The size of the industry, which exported in 1968 close to a million cases is such that at present major tracts of land are cultivated exclusively for the processing industry.

Traditionally, Mexican exports have been directed to the U.S. market, which continues to absorbe a major share of Mexican exports. However, in recent years, Mexican canned pineapple have been selling well on the markets of Canada, the German Federal Republic, Spain, Italy, the Netherlands, Norway, Sweden and Japan.

3.7 AUSTRALIA

The Australian pineapple processing industry is geared for producing a quality product both for domestic consumption and exports. The industry is less dependent upon fluctuations in world market demand than is the case with the leading exporters which have very limitated domestic consumption. Similar to the patterns in South Africa and Mexico, Australia consumes also large quantities of fresh pineapple.

The Smooth Cayenne is the most common variety cultivated in Australie for canning. Pineapples are harvested twice a year from January to April (summer crop) and the winter crop which is harvested during the rest of the year.

Yields per acre are good, at times exceeding 40 tons per acre per crop cycle. Geographically, cultivation is concentrated mainly in the coastal areas of Queensland.

Total output has been growing rapidly in recent years with a definite trend towards larger plantations. Cultivation has been undergoing modernization in terms of technology. Agriculture as well as industry have been investing constantly in modern labor saving installations and equipment. The effort to reduce labor intensity is also apparent in the trend towards larger plantations and processing plants, which permit the most efficient utilization of modern technology under condition of economies of scale. Thus, the Committee of Direction of Fruit Marketing (C.O.D.) has at

Northgate, near Brisbane, a cannery with a processing capacity of at least 50,000 Tons of fresh pineapple per season. The marketing of pineapple in Australia is well organized by the growers' organization - C.O.D. -, which organizes the marketing of fresh fruit and allocates fruit to the canneries.

Between 1963 and 1968 exports have been doubled reaching about 600,000 cases per annum. With the growth of exports the share absorbed by the local market, has been declining despite its absolute growth reaching currently about 50% of total industry shipment.

The U.K. continues to provide a major overseas market for Australian canned pineapple. However, the U.K., which absorbed some 80% of Australian canned pineapple export in the early nineteen fifties, is at present consuming less than a third of Australia's export. Other markets on which Australia output have been selling in recent years include Canada and Western Europe, especially Scandinavian markets and the Federal Republic of Germany.

There are certain similarities between the U.S.A. and the Australian industry; both have a significant domestic demand for fresh fruit and canned fruit, but have been competing with the output of countries with much lower labor cost. In both cases, there has been a tendency to overcome high labor costs by means of labor saving equipment and technology. Despite all these apparent similarities there is one cardinal difference: U.S.A. processors have been losing the battle on the export front and on the home front to such countries as Taiwan and Malaysia while Australia seems to be doing well at least in terms of growing domestic sales and exports. It may be worthwhile to analyze and compare both cases in some detail.

3.8 CUBA

Traditionally canning of pineapple in Cuba has been a subsidiary industry to the production of fresh fruit for export, mainly to the U.S.A. Since the setting up of the Castro government in Cuba, reliable information relating to the pineapple industry has not been generally available.

However, with the elimination of the U.S.A. as a market, for political reasons, Cuba's industry processes most of the country's fresh fruit output. It is estimated that the industry has at present an annual output of about 5,000 Tons, most of which is marketed in Eastern Europe. This compares unfavorably with annual exports of 12,000 in 1956.

Cultivation as well as processing under the present government,have undergone radical changes in terms of structure and technology. There has been much more reliance on labor intensive methods. Due to the lack of reliable data and information it is difficult to assess the efficiency of the organization and technology currently utilized on the island.

3.9 OTHER SOURCES

In addition to the above mentioned sources for canned pine--apple in international trade, some new sources have emerged in recent years to supply a share of the growing demand in North America, Western Europe and Japan. It should be noted that some of thse sources have been able to export primarily due to protective and preferential customs schemes. While this is the case in some instances it is by no means total. In other cases the new sources have displayed after a while an ability to compete on their own on the international market in terms of reliability of supply, uniform high quality of output and stable competitive prices.

Ivory Coast

The pineapple processing industry of the Ivory Coast has been developing rapidly in recent years in response to the growing demand in the markets of the European Economic Community. Due to it former status as a French colony and at present, member of the French Community, the Ivory Coast pineapple processing industry has preferential access to the E.E.C. markets.

In 1968 the Ivory Coast was the second largest supplier of the Common Market following Taiwan. Total consumption of canned Ivory Coast pineapple in the E.C.C. totaled that year 22.6 thousand Ton which was allocated as follows:

12.5	thousand	ton	- France
5.3	"	"	- Federal Republic of Germany
1.9	"	"	- Netherlands
1.5	"	"	- Italy
1.4	"	"	- Belgium and Luxembourg

Practically all of the Ivory Coast output is presently sold on the Common Market. The industry is dependent upon its preferential customs treatment which enables successful competition against most other sources. Under the stimulus of a relatively protected market, the industry, which is labor intensive, has been able to develop a quality pack which is reliable both in terms of uniform quality and delivery time. There is however no doubt that competition on an equal footing with Taiwan and other sources would result in a major decline of sales in the Common Market. There is no information commonly available to indicate to what degree, if any, the Ivory Coast processing industry is connected to or controlled by French food processing industry (as is partially the case in the Philippines with regard to U.S.A. interests).

Martinique

Martinique, like the Ivory Coast has been developing rapidly a pineapple processing industry in response to the opportunities associated with preferential entry into the Common Market; due to its French colonial past. The industry is not new and dates from the early 1920's when the Smooth Cayenne variety has been first grown in commercial quantities. Until the 1940's output has been expanding slowly, however, during the war production increased significantly. After the Second World War production has been largely for the French market to which the industry's output had preferred access. Since the establishment of preferred entry conditions into the European Economic Community, the industry has been growing rapidly.

In 1966 exports to the Common Market totalled close to 10,000 ton canned pineapple compared to 6.3 thousand Ton in 1967. In this, as in some other aspects the industry has certain similarities with the Ivory Coast.

In Martinique pineapples are grown in rotation with sugar and bananas, so that some of the effects of mono-culture are avoided. The fruit is of high quality, but production costs of the canned product are high, compared to other major exporters. Processing capacity in Martinique is in excess of output due to the scarcety of fruit availability for processing. It is doubtful whether the industry could at present compete successfully on an equal footing in the common market.

Kenya

Pineapple of the Smooth Cayenne variety has been grown in Kenya for many years. The processing industry, which started in the early 1950's in response to the growing demand on the U.K. market, has developed rapidly, though not without difficulties.

The most suitable fruit for canning is grown in Kenya at altitudes between 4,500 and 5,500 feet above sea level. Above that altitude pineapple is pale and acid with a weak flavour, while below 4,500 feet the fruit is sweet and insipid when processed. Before recognition of these altitude limitations became commonly accepted, significant tracts have been planted at unsuitable altitudes. As a result a significant share of Kenya's canned pineapple has to be marketed at lower grade prices.

Until the early 1960's the U.K. absorbed a major share of Kenya's export; since then Kenya's output has been selling also on other markets including the U.S.A., the German Federal Republic and other West European countries. Practically all of Kenya's production is exported and 1968 production reached 35,000 Ton compared with 6,000 Ton annually during the early 1950's. As mentioned above, East African exports of canned pineapple have suffered from uneven quality which has hurt the industry in general and the East African industry in particular. The industry, which is associated with West European and American food processing interest is technologically quite modern and efficient.

4. APPENDICES

4.1 Statistics

EXPORTS OF CANNED PINEAPPLE

(1,000)
(CASES)

Country/Year	1963	1964	1965	1966	1967	1968
Australia	313.0	336.0	289.0	400.0	640.0	496.0
Malaysia	2.512.3	2.620.2	3.241.1	3.419.0	3.190.2	3.512.0
Mexico	792.3	914.9	874.9	1.100.8	764.2	910.0
Philippines	1.627.6	1.647.6	2.008.4	1.972.1	2.376.6	N.A.
Puerto Rico	231.1	211.5	242.4	259.5	160.7	153.7
South Africa	1.975.7	1.928.8	1.732.1	1.913.3	2.137.7	2.456.7
Taiwan	2.364.2	2.913.0	3.744.2	3.816.9	3.904.8	3.780.4
United States	2.085.2	2.079.3	2.257.8	2.041.4	1.476.3	1.303.8

4/2

IMPORTS OF CANNED PINEAPPLE

(1,000 CASES)

Country/Year	1963	1964	1965	1966	1967	1968
Belgium	390.7	367.3	346.1	437.4	401.8	377.4
Canada	1.329.6	1.031.3	1.271.7	1.255.9	1.324.4	1.276.4
Denmark	212.4	235.7	226.0	246.5	203.0	208.8
Finland	74.9	74.6	58.9	57.1	55.8	70.0
France	785.9	932.4	1.004.0	1.138.8	1.078.5	1.023.5
West Germany	2.624.0	3.099.3	3.572.0	2.846.9	3.337.5	2.870.2
Japan	1.388.6	1.787.9	2.121.0	2.503.9	2.322.2	2.537.8
Netherlands	387.0	354.6	464.9	493.2	512.3	411.5
New Zealand	226.8	194.8	224.9	166.7	-	-
Sweden	184.5	144.1	166.3	195.6	191.6	227.0
United Kingdom	2.931.3	2.607.7	2.716.0	3.269.0	3.269.6	2.424.1
United States	2.877.5	3.288.5	3.530.1	4.197.6	5.051.9	5.705.4

1970 IMPORTS OF CANNED PINEAPPLE PRODUCTS

UNITED KINGDOM

Pineapple Juice	232,634 cwts (2.504,612 gallons)
Canned Pineapple	1.284,990 cwts
Pineapple Pulp	28,066 cwts

EUROPEAN ECONOMIC COMMUNITY

MAJOR IMPORT SOURCES OF CANNED PINEAPPLE

Country	Ton	Market Share %
Ivory Coast	21,905	23.7
Taiwan	21,022	22.7
U.S.	15,513	16.8
Philippines	10.907	11.8
Martinique	9,806	10.6
South Africa	8,896	9.6
Malaysia	4,420	4.8
Total	92,469	100.0

4.2 Product description

4.2.1 Canned Fruit

Canned pineapple are consumed in a variety of forms, some of these forms are intended primarily for retail consumption, while others serve for the institutional market. Often as ingredients in the preparation of other foods. The following is a short list indicating the range and variety of canned pineapple forms.

- Pineapple slices. Most popular form of canned pineapple for retail consumption. Pineapples slices consists of a whole regular slice cut across the axis of the peeled cored fruit cylinder, this product requires the highest grade of raw material as there is no reasonable way to hide blemishes and other imperfections in appearance or shape.

- Half slices. Consist of semi-circular halves of slices similar in most respects to a whole slice. However, the ability to can only half a slice permits utilization of less perfect raw material than is required for whole slices.

- Broken slices. Consist of arc-shaped portions cut or broken from slices. Not uniform in size or shape, this item is both for the retail and the institutional markets; permit the utilization of broken slices and irregularly shaped fruit.

- Tidbits. Consist of reasonably uniform slice sections. Each sector is not larger than 1/6 of the slice from which it is cut. Tidbits are used in fruit cocktails and are intended for both retail and institutional markets.

- Chunks. Consist of short thick pieces cut from the slice or from peeled cored fruit. Chunks are usually not uniform in shape and size and serve primarily the institutional market.

- Spears or Fingers. These are long slender pieces, cut parallel to the cored axis from peeled cored fruit cylinders. Each spear is usually not larger than 1/6 of the cylinder from which it is cut and usually not less than six centimeters long.

- Cubes diced: Consist of cube shaped pieces cut from slices While not uniform, most units are not larger along any edge than 1.5 centimeters.

- Crush. Consists of shredded or finely cut pieces of pineapple tissue.

The above list is arranged in the descendent order of the utilization factor of the raw material; pineapple slices requires the best, the most perfectly shaped raw material; crush may be produced by utilizing irregularly shaped fruit and odd ends and pieces from which better defined shapes have already been cutout.

4.2.2 Canned Juices

Pineapple juice is a product of importance primarily in the markets of North America. In the European market, pineapple juice is of rising importance, even though it has so far not attained anything like its importance in the U.S.A. Of interest in this connection is the rising popularity in the U.S. of various fruit juice mixtures, in which pineapple juice is an important ingredient. Blended and straight the consumption of pineapple juice is growing in most markets. Due to the small market volume in most countries, no separate statistics on pineapple juice are available. While the composition of straight pineapple juice is technologically well defined, pineapple blends are at times subject to manufacturers secret formulations. Hawai manufacturers have recently been pioneering in the introduction of tropical fruit juices punches, in which pineapple juice is of major importance. While market data is scarce it seems that consumers' acceptance in most cases has been slow and it is still early to judge the success of this product.

4.2.3 Frozen Products

Frozen pineapple products are not new in terms of technology. Frozen fruits as well as juice concentrates are technologically fairly well familiar. However, commercially, these items are less known and their introduction to the market possess certain risks and difficulties. It is to be assumed that the success of these items will be linked to the popularity of fresh fruit, which froze fruit is supposed to replace most closely and in this connection it may be worthwhile to conduct an exhaustive investigation into the reasons for the decline, in the last two decades, of fresh fruit consumption in U.S.A. On the other hand it may also be illuminating to understand why fresh fruit consumption keeps rising steadily in Western Europe. The great success of certain frozen soft fruits both in U.S.A. and in Europe, would seem to indicate that frozen pineapple may also catch on in terms of popularity, this however has not been the case so far.

4.2.4 Dehydrated Candied and other Products and by-products

Pineapple is also consumed in other forms, which includes dehydrated fruit and juices, candied fruits, jams, syrup and such products as chuttney, bromeline, vinegar and animal feed. No statistics are available on a consistent basis to analyze comparative market trends of any of these items. However, with the growth of the pineapple processing industry and the growing popularity of the canned fruit, it is to be assumed that dehydrated candied fruit and jams are also sold in larger quantities. It should be noted that some of the by products, which are rarely traded internationally are in some cases important sources of income to the processor.

74.09.13