

Market Development

MARKET BRIEF ON
NUTMEG AND MACE

A WORLD OVERVIEW
1994

ITC



INTERNATIONAL TRADE CENTRE UNCTAD/WTO

NUTMEG AND MACE - WORLD OVERVIEW

Product description

The nutmeg tree, *Myristica fragrans*, is indigenous to the Moluccas in Indonesia but has been successfully grown in other Asian countries and in the Caribbean, namely Grenada. A range of commercial products derive from the nutmeg tree of which the spices - nutmeg and mace - are the most commonly known and widely traded; other products are their essential oils, extracted oleoresins and nutmeg butter. Other nutmeg tree species include the *M. argentea* which produces 'Papuan' nutmegs from Irian Jaya and Papua New Guinea, and *M. malabarica* which produces 'Bombay' nutmegs from India; both are used as adulterants of *M. fragrans* products. This market brief series focuses on world trade in the spices which are classified under the following codes:

HS 0908.10	Nutmeg
HS 0908.20	Mace
SITC(3) 075.25	Nutmeg, mace and cardamoms

The spices in their ground form are mainly used in the food processing industry, principally in the seasoning of meat products; they are also used in soups, sauces, baked goods and spice mixes such as curry powder in Japan. Both spices have similar taste qualities; mace is more popular because of its light orange colour in light coloured foods. Nutmeg, in general, tends to be sweeter and more delicate. These products are also used in the perfumery and pharmaceutical industries. A possible, future use for nutmeg is as a natural control for insects that infest stored cereal grains.

Production and trade

World production of nutmegs is estimated to average between 10,000 and 12,000 tons per year with annual world demand estimated at 9,000 tons; production of mace is estimated at 1,500 to 2,000 tons. Indonesia and Grenada dominate production and exports of both products with a world market share of 75% and 20% respectively. Other producers include India, Malaysia, Papua New Guinea and Sri Lanka, and other Caribbean islands such as St. Vincent. The principal import markets are the European Community, the United States, Japan and India. Singapore and the Netherlands are major re-exporters.

The East Indian islands of Siau, Sangihe, Ternate, Ambon, Banda and Papuan (Irian Jaya) produce nutmegs which are highly aromatic. Grenada produces the West Indian variety which is milder in flavor and lighter in color. International trade in nutmegs is either of the East Indian variety or the West Indian variety, with a negligible quantity of wild 'Bombay' nutmegs imported by the United States.

Market profile

International trade in spices as a whole, valued at an estimated US\$ 1.5 billion for a volume of 400,000 tons, has experienced substantial growth in demand over the last two decades, particularly for major spices such as pepper.

Demand for nutmeg and mace grew in the 1970s but has been relatively stable despite a significant decline in prices due to oversupply (production and stocks(1)) from the two main producers, Indonesia and Grenada in the 1980s. Prices are crucial for the decision to plant, and since the spices come from a tree and are harvested 7-9 years after plantation with the tree reaching its peak after 20 years, investment in this sector is a long-term venture.

In 1986, the world price for higher grades of nutmeg was approximately US\$ 1,000 per ton which did not ensure adequate returns to exporters. This led to a decision by Grenada and Indonesia to negotiate a marketing arrangement. In 1987, a 'Marketing Agreement' was concluded between the Indonesian producers group, Asosiasi Pala Indonesia or ASPIN formed in 1985, and the Grenada Cooperative Nutmeg Association (GCNA) with the objectives of controlling export volumes of nutmeg and mace to

ensure price stability and of setting minimum price levels. Under the agreement creating the cartel, Indonesian and Grenadian producers agreed to the following minimum export prices:

US\$/ton	Indonesia	Grenada
High quality nutmeg	6,800 - 7,000	6,650
Low quality nutmeg	1,000 - 1,200	5,575
High quality mace	13,500	11,750
Low quality mace	6,000	5,750

Source: Financial Times, 19 June 1992

Prices and revenues increased for both countries but in 1989, the cartel collapsed as Indonesian producers began selling below the minimum price levels, followed by the Grenadians. Despite efforts to re-establish the cartel, the subsequent economic liberalization of the Indonesian economy in 1990 effectively ended the Agreement.

(1)Both Indonesia and Grenada usually keep one year's supply in stock; however, low prices led to stockpiling and the subsequent agreement to destroy an estimated 300 tons each of low quality nutmeg. In 1993, Indonesia and Grenada reportedly held 5,000 tons and 4,000 tons in stock respectively.

In 1992, efforts were made by Grenada to recreate the cartel given the low world prices commanded by nutmeg and mace; it should be noted that Grenada earns up to 40% of its total foreign exchange earnings from exports of nutmeg and mace and it is therefore in the country's interests to keep prices high. An important feature of these negotiations was the attempt to eliminate intermediaries or commodity brokers from the market(2). As a result of negotiations in May 1993, both Indonesia and Grenada agreed to destroy a percentage of their stocks in an effort to bolster world prices which rose by up to 40% following the announcement.

In 1994, Grenada's nutmeg and mace output are expected to be below average due bad weather; average annual production is between 2,700 tons and 3,000 tons of nutmeg and 275 tons of mace. Forecasts for 1994 are at 2,000 - 2,200 tons of nutmeg and 120 tons of mace. Forecasts for Indonesia were not available.

Prices

ITC's Market News Service (MNS) issues weekly prices on a subscription basis for twenty-one spices, spice seeds and herbs, covering: USA, Japan, Hong Kong, Singapore, and selected European and Middle Eastern markets. Extracts of MNS prices for nutmeg and mace on 29 April 1994 are given below.

Quality standards

Nutmegs and mace are classified by origin (East or West Indian) and by grade.

1.Nutmegs

Whole nutmegs are grouped under three broad quality classifications:

- ◆Sound: nutmegs which are mainly used for grinding and to a lesser extent for oleoresin extraction;
- ◆Substandard: nutmegs which are used for grinding, oleoresin extraction and essential oil distillation
- ◆Distilling: poor quality nutmegs used for essential oil distillation.

(2)In April 1992, the Indonesian state trading company, Berdikari, and the Dutch company, Catz International, formed a joint venture (BerCatz BV) to buy Indonesian nutmeg and mace and trade it on

international markets. According to their own estimates, BerCatz controls almost all the nutmeg and mace exported from Indonesia. Marketing agents for Grenada are JHB International in Belgium.

Indonesia - High quality or **sound** whole nutmegs are traded in grades which refer to their size in numbers of nutmegs per pound: 80s, 110s and 130s (110 to 287 nuts per kg), or 'ABCD' which is an assortment of various sizes.

Origin / Destination	Nutmegs - Grade	US\$/ton CIF
Grenada / main European port	GUNS	1,800
	80's	3,200
	60/65's	3,350
	110's	2,950
Indonesia / Netherlands	BWP	1,425
	BWP spot	1,385 (June-July)
	Shrivels	1,825 (June-July)
	ABCD spot	1,700 (June-July)
Indonesia / Germany	Shrivels	1,600 (June-July)
	ABCD	1,700 (June-July)
	BWP	1,675 (June-July)
Indonesia / United Kingdom	SUNS	1,875 (June-July)
Papua New Guinea / Netherlands	BWP	1,425
	ABCD	1,950
	Whole spot	2,205
West Indies / USA	Whole spot	1,765 (September)
East Indies / USA	Whole spot	2,100
Indonesia / Japan	110's spot	2,500 (June-July)
	110's	1,600
	FAQ	1,170
Indonesia / Saudi Arabia	110's	1,035
Sri Lanka / Bahrain	110's FAQ	US\$/ton CIF
Sri Lanka / Kuwait	Mace - Grade	
Origin / Destination	Mace 1	8,500 (August)
Grenada / main European port	Mace 3	1,600
	Broken 2	3,000 (June-July)
	Whole	3,100 (June-July)
Indonesia / Netherlands	Siftings 2 spot	2,645
Siauw / USA		

Source: Market News Service, "Spice World", N° 21/94, 8 June 1994

Indonesia - Substandard nutmegs are traded as 'sound, shrivelled' which in general have a higher volatile oil content than mature sound nutmegs and are used for grinding, oleoresin extraction and oil distillation; and 'BWP' (broken, wormy and punky) which are mainly used for grinding as volatile oil content generally does not exceed 8%.

Distilling grades of nutmegs are of poorer quality: 'BIA' or 'ETEZ' with a volatile oil content of 8% to 10%; and 'BSL' or 'AZWI' which has less shell material and a volatile oil content of 12% to 13%.

Grenada - Sound nutmegs are sold as sound unassorted which corresponds to the Indonesian grade 'ABCD'. In Grenada, determining whether a nutmeg is of sound quality is carried out by a water test where nutmegs are placed in a basket partly submerged in water: sound nutmegs sink whereas the unsound float.

Substandard nutmegs are classified as 'floats', and as 'defectives', the latter is similar to the Indonesian BWP grade but considered of higher quality.

Distilling grades of nutmegs are primarily exported to the USA and consist of 'floats'.

2. - Mace

The same applies to mace which is classified as *whole pale mace, No1 broken mace, selected, unassorted or siftings* (Indonesia), and as *whole, broken blades or siftings* (Grenada).

However, the standards are not well defined and the preference for a specific quality depends a lot on the preference and experience of the buyer.

The international standards applicable for trade in spices of nutmeg and mace are *ISO 6577:1990 (Nutmeg, whole or broken, and mace, whole or in pieces - Specifications)*.

Distribution channels

In principle, the distribution channels for nutmeg and mace are the same as for other spices which, since the 1980's, have seen a shift towards direct sales to end-users by producers; this has also led to a reduced role of major trading/entrepôt centres such as Singapore in the case of nutmeg and mace.

The distribution network is naturally influenced by the monopoly Indonesia and Grenada have on the nutmeg and mace trade and their efforts to decrease the role of intermediaries. The establishment of the Grenada Cooperative Nutmeg Association in 1947 had already significantly decreased the role of Grenadian dealers in the distribution chain. This was further intensified with the subsequent appointment by GCNA of JHB International as their marketing agents; and with the creation of ASPIN and the joint venture between the Indonesian state trading company, Berdikari, and the Dutch company, Catz International, to form BerCatz BV which markets virtually all Indonesian exports of nutmeg and mace.

Packaging

Nutmegs are usually packed in double-layered linen, jute, sisal or woven polythene bags. If other packing is used, care must be taken to avoid materials which might lead to 'sweating' and the development of mould. Spices must be thoroughly dried before shipment. They can then be transported in containers in conventional vessels. Packaging should be such that maximum weight loss is 10%, (e.g. 20 kg declared weight should be at least 18 kg upon arrival at port).

Environmental regulations regarding packaging will be of increasing importance. A source of information on this is Duales System Deutschland GmbH (see Useful addresses).

Useful addresses

Tariff information

Worldtariff Ltd
220 Montgomery St., Suite # 432
San Francisco, CA 94104-3410
USA
Tel: (415) 391 7501
Fax: (415) 391 7537

International Customs Tariff Bureau
38, rue de l'Association
1000 Brussels
Belgium

Environmental packaging

Duales System Deutschland GmbH
Abteilung Vergabe "Grüner Punkt"
Postfach 1324
Rochusstraße 2-6
D-W-5300 Bonn 1
Germany
Tel: (228) 97 920
Fax: (228) 979 2198

NUTMEG AND MACE - EU OVERVIEW

Product description

CN 0908.10-10 Nutmegs for industrial manufacture of essential oils or resinoids
CN 0908.10-90 Crushed or ground nutmeg
CN 0908.20-10 Mace, excluding crushed or ground
CN 0908.20-90 Crushed or ground mace

Trade

The major importers within the European Union (EU) are:

- ◆ Nutmegs imported for industrial use: Germany, France, United Kingdom, Denmark;
- ◆ Crushed or ground nutmeg: Netherlands, Germany;
- ◆ Mace, excluding crushed or ground: Germany, Netherlands, Belgium-Luxembourg;
- ◆ Crushed or ground mace: Netherlands, Belgium-Luxembourg, United Kingdom, France.

Detailed statistics can be provided against payment (free of charge to least developed countries).

Market profile

The EU is the largest import market for nutmeg and mace. However, demand for nutmegs is not very price-sensitive and the falling prices have not led to increased imports. This is due to the fact that demand in traditional end-use sectors has not grown. In general, importers prefer whole nutmegs and mace of the East Indian variety. However, because of historical reasons, the West Indian varieties have held a strong position in the United Kingdom. Much of the imports to the Netherlands are re-exported, partly to the United States but mostly within the European Union.

Market access

Imports of nutmeg and mace are subject to the following customs tariffs in the EU:

Tariff heading	Duty - MFN rate
0908.10-10	Free
0908.10-90	5%
0908.20-10	Free
0908.20-90	4%

Source: World tariff Ltd

Imports from least developed countries (LDCs) are exempt from customs duties.

The following value-added tax (VAT) rates are levied on imports of food products:

-	Belgium	6.0%	-	Italy	9.0%
-	Denmark	25.0%	-	Luxembourg	3.0%
-	France	5.5%	-	Netherlands	17.5%
-	Germany	7.0%	-	Spain	Zero-rated
-	Greece	18.0%	-	UK	Zero-rated
-	Ireland	Zero-rated			

(Rates for Portugal were not available.)

High quality is of prime importance for importers of nutmeg and mace. Separate national standards have been issued to obtain the desired level of quality:

- | | | | | | |
|---|--------------|----------------------|---|-----------------|-------------------|
| - | Netherlands: | <i>Spices Decree</i> | - | United Kingdom: | <i>BS 7087:14</i> |
| - | France: | <i>NF V32-125</i> | | | |

However, most European traders prefer the *ASTA (American Spice Trade Association) Cleanliness Specifications* which are regarded as stricter than other national standards. The most common complaints on imports of nutmeg concerns aflatoxin in the Netherlands and in Germany, and salmonella in the United Kingdom. Recently, much attention has been given to the irradiation of spices. Although no regulations exist, customers prefer non-irradiated spices. Likewise, the use of environmentally friendly methods for cultivating the spices is becoming a niche market.

Distribution channels

Main dealers are located in Rotterdam, Amsterdam, London and Hamburg. Dealers in the Netherlands are to a large extent processors and re-exporters to the United States and within the European Union.

For retail trade of nutmeg in the Netherlands, the whole nutmeg must be limed, *i.e.* coated with chalk; this is almost entirely carried out by importers.

A list of importers can be provided against payment (free of charge to LDCs).

Packaging

Recommended packaging is described under World Overview. For labelling in the EU market, the following requirements need to be fulfilled:

- | | | | |
|---|----------------------|---|-----------------------------------------|
| - | name of the product | - | name of the manufacturer or distributor |
| - | any care conditions | - | special storage conditions |
| - | country of origin | - | metric requirements |
| - | instructions for use | | |

It is advisable to write labels in at least two official languages of the European Union.

Commercial practices

Initial contacts are usually made by fax or telex. Samples of the spice are sent and, subsequent to acceptance, an agreement between buyer and seller can be settled using a standard contract. In the Netherlands the contract is issued by the Dutch Spice Association, and in the United Kingdom the contract terms are settled by the International General Produce Association. Whether traded on an FOB or CIF basis is subject to negotiation.

Sales promotion

Marketing missions and promotional materials are the most common means of promotion. In addition, advertisements can be placed in specialized magazines such as "Perfumer & Flavorist", "Meat Industry" and "Foodnews". Trade fairs of interest are Slavakto, Horecava and FIE in the Netherlands, Anuga in Germany, and SIAL in France (see Useful addresses).

Market prospects

The prospects for the trade of nutmeg and mace in the EU are not promising for new suppliers from countries other than Indonesia and Grenada. An increase in the use of oleoresins does not seem likely because of the relatively conservative attitude of the European food processing industry. The British industry differs on this point which could lead to a rise in the consumption in the United Kingdom.

Useful addresses

1. Associations

Spice Trade & Seasoning
Manufacturers Association
6 Catherine Street
London WC2B 5JJ
United Kingdom
Tel: (071) 836 2460
Tel: (071) 836 0580

Syndicat National des Triturateurs-
Conditionneurs de Poivres et Epices
8, rue d'Isly
75008 Paris
France
Tel: (1) 45 22 28 15
Fax: (1) 43 87 85 40

Nederlandse Zuidvruchten
vereniging
Bezuidenhoutseweg 82
822594 AX Den Haag
Netherlands
Tel: (70) 383 3011
Fax: (70) 347 5253

Waren-Verein der Hamburger Börse
Plan 5
2000 Hamburg 1
Germany
Tel: (040) 326 414
Fax: (040) 322 639

2. Standards

International Organization for
Standardization (ISO)
1, rue de Varembe
1211 Geneva 10
Switzerland
Tel: (022) 749 0111
Fax: (022) 733 3430

Codex Alimentarius Commission
Via delle Terme di Caracalla
00100 Rome
Italy
Tel: (6) 57 971
Fax: (6) 5797 3152

3. Import Promotion Offices (assist exporters in developing countries)

DeCTA
Bank House
Sutton Court Road
Sutton, Surrey SM1 4SP
United Kingdom
Tel: (081) 643 3311
Fax: (081) 643 8030

Pro-Trade/GTZ GmbH
Dag Hammarskjöldsweg 1-5
6236 Eschborn
Germany
Tel: (6196) 790
Fax: (6196) 797 414

Promex-PMA
10, Avenue d'Iéna
75016 Paris
France
Tel: (1) 40 73 30 67
Fax: (1) 40 73 39 69

CBI
P.O. Box 30009
3001 DA Rotterdam
Netherlands
Tel: (010) 201 3434
Fax: (010) 411 4081

4. Trade fairs

Netherlands

Slavakto (*meat industry*)
The Royal Netherlands Industries
Fairs
Jaarbeursplein
P.O. Box 8500
3505 RM Utrecht
Tel: (30) 955 911
Fax: (30) 940 379

Horecava (*catering industry*)
RAI gebouw
Europaplein 8
1078 GZ Amsterdam
The Netherlands
Tel: (20) 549 1212
Fax: (20) 4644 6910

FIE (*Unground products for foodstuff
industry*)

Expoconsult Maarsen
Industrieweg 54
P.O. Box 200
2600 AE Maarsen
Tel: (3465) 73 777
Fax: (3465) 73 811

Germany

Anuga - Central Marketing
Gesellschaft de Deutschen
Agrar Wirtschaft
Koblenzerstrasse 148
5300 Bonn-bad Godesberg
Tel: (228) 8470
Fax: (228) 847202

France

SIAL - Salon International de
l'Alimentation
39, rue de la Bien Naissance
75008 Paris
Tel: (1) 42 89 46 87
Fax: (1) 42 89 46 94

NUTMEG AND MACE - USA

Product description

HSTUSA 0908.10-0000 Nutmegs
HSTUSA 0908.20-2000 Mace, 'bombay' or wild, ground
HSTUSA 0908.20-4000 Mace nes

Market profile

The USA is the largest individual market for whole nutmegs. Importers of the United States prefer the East Indian variety of deep-brown, aromatic nutmegs and orange-red mace in their whole form. Indonesia has traditionally been the principal supplier of nutmegs and mace to the US market, accounting on average for 65% of total US imports of nutmegs per year in terms of volume. It is also the main supplier of mace. (Detailed statistics can be provided against payment.

Following talks between ASPIN and GCNA in 1993, Indonesia has agreed to allow Grenada greater access to the US market. The outcome, however, depends on the processors' reaction on the US side and the Grenadian producers' ability to satisfy market requirements.

The US food and beverage industry is one of the largest in the world with a correspondingly high consumption of spices and their oleoresins and essential oils. One of the uses of nutmeg oil is in the manufacture of soft drinks, specifically Coca-Cola. The US food and drink market is also one of the most highly developed in terms of innovation in flavorings, fast foods and the ethnic foods sector.

Market access

Imports of nutmeg and mace are subject to the following customs charges:

<u>Tariff heading</u>	<u>MFN</u>	<u>GSP</u>
0908.10-0000 Nutmegs	Free	Free
0908.20-2000 Mace, 'Bombay' or wild, ground	16.5¢/kg *	Free
0908.20-4000 Mace nes	Free	Free

Source: World tariff Ltd

* The MFN rate was lowered to 12.4¢ per kg (31 December 1993).

Other charges include a Merchandise Processing Fee (0.19% of FOB value) and a Harbor Maintenance Fee (0.125% of FOB value). In addition, general sale and use taxes are levied at the state level (rates differ from state to state).

The American Spice Trade Association issues ASTA Cleanliness Specifications which set the quality requirements necessary to enter the US market. The major complaints on the part of US importers has been the presence of insect fragments in shipments of nutmegs. As in the EU, non-irradiated spices are preferred.

Distribution channels

The main brokers and dealers in spices are located in New York; the main ports of entry are New York, Baltimore, Los Angeles and San Francisco. Up to the 1980s, the traditional distribution chain for spices was from exporter to importer via a US agent. At the national level the distribution channel was:

Importer -> broker -> grinder/processor ->

- (i) wholesaler,
- (ii) retailer,
- (iii) food processor.

Since then, direct purchase from source has reduced the number of intermediaries in the chain. Exporters should also note that official ASTA contracts are used. US dealers prefer C&F quotations, in general. A list of importers can be provided against payment; free of charge to LDCs.

Market prospects

Consumer trends for health foods, ethnic cuisine and fast foods, in addition to the need for constant innovation in the food industry, all indicate that consumption of spices and spice oleoresins, in general, will continue to grow. This is reflected in the fact that the food industry and institutional outlets consume up to 65% of imported spices as opposed to 40% a decade ago. This implies a growing 'prepared foods' market and increased demand from the restaurant and catering sector. Therefore any growth in these two sectors will have a direct influence on imports of spices, and to a lesser extent of nutmegs and mace.

Useful addresses

American Spice Trade Association
(ASTA) Inc.
580 Sylvan Avenue
P.O. Box 1267
Englewood Cliffs, NJ 07632
Tel: (201) 568-2163
Fax: (201) 568-7318

Flavour and Extract Manufacturers
Association of the United States
1620 I St., NW, Suite 925
Washington D.C. 20006
Tel: (202) 293-5800
Fax: (202) 463-8998

United States Department of
Agriculture (USDA)
Agricultural Marketing Service
Washington, D.C. 20250
Tel: (202) 720-4276
Fax: (202) 720-8477

NUTMEG AND MACE - JAPAN

Product description

JHS 0908.10-100 Nutmeg put up in containers for retail sale

JHS 0908.10-210 Nutmeg, neither crushed or ground, not put up in containers for retail sale

JHS 0908.10-220 Nutmeg, crushed or ground, not put up in containers for retail sale

JHS 0908.20-210 Mace, neither crushed or ground, not put up in containers for retail sale

JHS 0908.20-220 Mace, crushed or ground, not put up in containers for retail sale

Main suppliers

Japan's major supplier of nutmegs and mace is Indonesia, accounting on average for 93% of total imports. Other suppliers include Malaysia, India and Singapore. Detailed statistics can be provided against payment; free of charge to LDCs.

Market profile

The Japanese import market for spices is the largest in the Asia-Pacific region; but per capita consumption is lower than in Europe or in the United States. However, with the tremendous growth in popularity of spicy foods, specifically Indian, consumption is expected to increase. Nutmegs and mace are used in the manufacture of curry powder.

The main end-user is the food processing industry. Nutmegs and mace and their oleoresins and essential oils are used in the preparation of meat products, soups, sauces and baked goods. An interesting feature of the Japanese market is the growth in the 'instant' and fast food sectors.

For spices in general, imports have increased over the last ten years, mainly for use in the food processing industry, but a non-traditional spice such as nutmeg has not benefited from this trend. Whole mace, on the other hand, has been imported in increasing quantities, partly due to its greater use in the manufacture of curry powder.

Market access

Whole nutmegs and mace are imported free of charge into Japan. Products put up in containers for retail sale are subject to a tariff of 4.2%.

The Quarantine System and Plant Protection Law and the *Food Sanitation Act* set the quality standards for nutmeg and mace. The main complaint concerning imported nutmegs has been the aflatoxin content. Spices may not be irradiated nor is it permissible use ethylene oxide gas to disinfect spices.

Distribution channels

Importers supply food processors, grinders/processors and essential oil and oleoresin manufacturers. These in turn supply the different end-use sectors such as curry manufacturers. A list of importers can be provided against payment; free of charge to LDCs.

Packaging and labelling

The Japanese customer is very demanding regarding packaging, particularly concerning environmental protection. Lettering size is prescribed for labels which must include:

- | | |
|-------------------------------------------------|----------------------|
| -name of the product | -net contents |
| -name and address of the manufacturer or seller | -date of manufacture |

Market prospects

The Japanese market is a promising one for spices given the changing lifestyles. More women are working in Japan today which increases the need for 'instant' and 'oven to table' type meals. Greater demand for non-traditional spices such as nutmeg and mace is probable in the food and drink sector with the consumer trend towards French, Italian and Indian cuisine.

To increase household consumption, "user-friendly" spices, spice mixes and attractive retail packaging are necessary. Exporters should coordinate with Japanese distributors and retailers in this area. Furthermore, a growing interest for international foods, trade liberalization and a stronger yen could have favorable implications for imports of nutmegs and mace.

Useful addresses

All Nippon Spice Association
Boeki Bldg., 4F
123 Higashi-machi
Chuo-ku
Kobe 651-01
Tel: (078) 321 8431
Fax: (078) 321 8460

Japan External Trade Organization (JETRO)
2-5, Toranomom 2-chome
Minato-ku
Tokyo 105
Tel: (03) 3582 5173
Fax: (03) 3585 5027

NUTMEG AND MACE - INDIA

Market profile

India's domestic production of nutmegs is insufficient to meet local demand and is therefore supplemented by imports. East Indian nutmegs and mace are traditionally preferred because of geographic proximity and their particular flavoring qualities which are more suitable for Indian foods. The principal suppliers to the Indian market for nutmegs and mace are Indonesia, Singapore and Sri Lanka; over the years their relative positions have changed. Detailed statistics can be provided against payment; free of charge to LDCs.

Market access

The recent trade liberalization reforms in India have to a great extent reduced customs duties and virtually eliminated non-ad valorem charges on imports. Nevertheless, duties remain high - imports of nutmegs and mace are subject to an ad valorem tax of 65%. However, preferences are accorded on an item by item basis, specifically for industries which are of particular importance such as food and beverages.

Shipments of nutmegs and mace should be accompanied by a general sanitary certificate. The Bureau of Indian Standards (BIS) can provide details on specifications for the Indian market (see Useful addresses); minimum standards comply with those issued by ISO.

Distribution channels

As India is one of the major producers and exporters of spices in general, exporters and food processors usually act as importers when local production is insufficient to meet domestic demand. Exporters are advised to appoint agents either on an exclusive or non-exclusive basis to handle all matters dealing with the marketing, including sales promotion, and distribution of goods within the country. The major market centres are Bombay, Calcutta, Madras and New Delhi. A list of importers can be provided against payment; free of charge to LDCs.

Packaging and labelling

India's principal ports are located in the central and southern parts of country. Packaging should therefore take into account climatic conditions and protect the goods from dampness, heat, exposure to sun and rain, insects, fungus and mould. Labelling should be in English and a minimum lettering size of 2 millimetres should be used for the country of origin. Labels should indicate:

- ◆ country/place of production or the name and address of the manufacturer,
- ◆ whether the goods were partly or wholly produced/processed in more than one country.
- ◆ the names of both countries where the goods were produced in one country and the packaging made in another.

In addition, there are standards in effect for marking and labelling related to weights and measures for imports packaged for retail sale.

Commercial practices

Indian importers are required to obtain a Code Number, issued by the Regional Licensing Authority, Chief Controller of Imports & Exports. Import licenses are issued on a CIF basis, issued in duplicates and valid for a period of 18 to 24 months. Payment should be made in the form of a letter of credit, payable in favor of the supplier against presentation of shipping documents through the importer's bank.

Market prospects

The Indian market is considered to be one of the top ten emerging markets in the world and as such presents very positive prospects for imports in general. This combined with a growing middle class, estimated at 200 million people with a substantial purchasing power, and a corresponding demand growth in the food and drink sector, should all positively affect demand for spices in general. In addition, the food processing industry has been declared a priority domestic economic sector.

Useful addresses

Bureau of Indian Standards (BIS)
9, Bahadur Shah Zafar Marg
NEW DELHI 110 002
Tel: (11) 331 0131
Tlx: 031-65870
Fax: (11) 331 4062

Ministry of Commerce
Udyog Bhawan
Maulana Azad Road
NEW DELHI 110 001
Tel: (11) 301 1938

Indian Trade Promotion Organization
(ITPO)
Pragati Bhawan
Pragati Maidan
Lal Bahadur Shastri Marg
NEW DELHI 110 001
Tel: (11) 332 8239
Fax: (11) 331 8142

Derivatives of nutmeg and mace - Market Overview

Product description

1. Essential oils

The dry kernel (seed), nutmeg, typically contains between 8% and 15% of essential oil obtained by steam distillation. The chief constituents of the aromatic oil are terpenes, mainly sabinene and β -pinene but the important fragrance and flavor constituents or aromatic ethers, which are found in the small oxygenated portion, are *myristicin* which can be produced synthetically, safrole, elemicin and isoelemicin.

Nutmeg oil is a colorless, pale yellow or pale green liquid with an odor and taste of the spice. The market makes a distinction between the East Indian, West Indian and Sri Lankan nutmeg oil where the East Indian oil is regarded to be the superior in flavor and odor. A further difference is their degree of solubility in alcohol (1 in 3 for the East Indian and 1 in 4 for the West Indian; unknown for Sri Lankan). Nutmeg oil is mainly used in flavorings, especially for soft drinks (colas in general, such as *Coca-Cola*) and meat products. It is used in cosmetics and toiletries because of its aromatic properties, especially in men's fragrances, as well as in the manufacture of pharmaceuticals (such as *Vicks Vaporub*) and in flavoring tobacco.

Mace oil possesses almost identical physiochemical and organoleptic properties as nutmeg oil. For mace oil the same distinction is made between the East and West Indian varieties. Mace oil is also used in perfumes and flavorings.

2. Spice oleoresins

Nutmeg oleoresins, obtained by solvent extraction from the dried spice of nutmeg, are used in colorings and flavorings in the food industry. The extracted spice oleoresin is a direct competitor of the dry spice.

3. Nutmeg butter

Nutmegs contain between 25% and 40% of fixed oil which can be obtained by expression. The nutmeg butter obtained is a highly aromatic, orange-colored fat. It is composed of 70% to 85% of *trimyristin* and other material including *myristicin*. Poor quality nutmegs are used for nutmeg butter production.

4. Others

Both nutmeg and mace contain the active ingredient *myristicin* which is a narcotic; it is the major constituent in mace. Myristicin, whether or not derived from nutmeg, is also found in crop-control insecticides and in flavorings used in tobacco products. East Indian oils have a higher concentration of myristicin (up to 13.5%) than West Indian oils (below 1%). This combined with a higher safrole content is probably responsible for the stronger nutmeg flavor in the East Indian variety. Myristicin can be synthesized from pine oil.

Myristic acid or *tetradecanoic acid*, a C14 fatty acid, is the predominant fatty acid of the nutmeg family, comprising between 70% and 90% of the glycerides of nutmeg butter (*Myristica fragrans*) and is obtained by fractional distillation. It is an oily, white crystalline solid, soluble in alcohol and ether. It is an intermediate in the preparation of myristyl alcohol, myristoyl chloride and related compounds.

Myristic acid is commercially available as a fractionally distilled product of 90% purity. It is used in the preparation of soaps, liquid detergents, shampoos, shaving creams, perfumes; in the production of plastics; in compounding rubber, paints and greases; in the synthesis of ester for flavors and perfumes; and as a component of food-grade additives.

Trimyristin is a triglyceride of myristic acid, and is a white to yellowish-gray solid.

Principal import markets

The main importer of nutmeg oil is the United States, accounting for around 50% of total global imports, followed by the United Kingdom with approximately 10%.

Indonesia dominates the US market as the main supplier of nutmeg oil as shown in the table below.

V: US\$ '000 Q: Metric tons	1990		1991		1992		1993(a)	
	V	Q	V	Q	V	Q	V	Q
Total	1,685	105.8	1,333	132.6	2,077	192.0	935.6	109.5
Indonesia	1,452	96.7	1,275	128.3	1,861	178.2	832.8	101.8
France	75	4.0	0	0	19	1.5	66.2	6.2
Mexico	0	0	3	0.6	57	1.7	14.0	0.4
UK	15	0	0	0	48	2.7	13.9	0.9
India	2	0	24	1.1	89	7.9	0	0

Source: US Department of Commerce, Bureau of the Census

(a) 1993 values are FOB country of origin; 1990-1992 values are CIF.

In the European Union, import data for nutmeg and mace oil are not available; however, data on nutmegs imported for the industrial manufacture of essential oils and resinoids are available against payment (free of charge to LDCs). Traded volumes of mace oil are very small. The main importer is the United States, which accounts for approximately 75% of total global imports. In the EU market, Germany is the major importing country.

Market characteristics

Nutmeg and mace oils and oleoresins used to be almost exclusively produced in importing countries, where end-users required higher quality and stricter control during production. However, Indonesia is now the main world supplier of nutmeg and mace oil, with over a 90% share of the US market. Other suppliers are Sri Lanka and Grenada. The supply of West Indian oil, however, is considered to be more irregular than that of the East Indian oil.

While the main end-user of the spice oleoresins is the food industry, recent trends may revive the fragrance sector, particularly the use of essential oils in aromatherapy and the "home fragrances" market niche. In a 1987 study (Warren *et al.*), it was reported that the main constituents of nutmeg and mace, myristicin, elemicin and iso-elemicin, when presented in aroma form acted as stress relievers. In Japan, many companies are diffusing aromas through air ventilation systems to improve the work environment as well as the quality of air. The same principle is now available for the home in different forms, such as scented candles, potpourris, atomizers, and other aroma products. According to a recent report, the US market for home fragrancing is valued at US\$ 500 million (Chemical Marketing Reporter, May 16 1994).

According to trade sources, apparent consumption of all natural fatty acids, including tall oil fatty acids, in the USA is an estimated 1.8 million pounds per year, of which approximately 12 million pounds of myristic and lauric acid. In Western Europe, apparent consumption is expected to reach 840 thousand metric tons in 1995. Japanese apparent consumption is estimated at over 300 thousand tons per year.

Nutmeg butter as a source for myristic acid is not widely used and information was not available from major processors of the fatty acid. The main sources for commercial myristic acid and of C8-C14 fatty acids in general, are coconut oil and palm kernel oil which contain approximately 18% of myristic acid. The percentage used of these oils in the production of myristic acid is not known, but approximately 50% of the 4.3 million metric tons produced of both oils is used for the production of lauric acid which has similar chemical properties and industrial applications as myristic acid, according to trade sources. It is a bulk chemical and in ample supply, particularly from Malaysia (*palm kernel oil*) and the

Philippines (*coconut oil*) where the main US and European producers of fatty acids have plants or joint venture agreements. Malaysia is the principal source for Japanese imports of fatty acids.

Market access

Imports of nutmeg and mace oil into the European Union are exempt from customs duties when originating in ACP or less developed developing countries (LDCs). Within the EU, a value-added tax (VAT) rate is applied to imports; this rate varies from country to country. Imports of nutmeg and mace oil from all origins into the United States are exempt from customs duties. The same applies to Japan for essential oils originating in developing countries; however, a list of authorized import volumes is issued annually. In the case of the European Union and Japan, shipments must be accompanied by a certificate of origin. For the European Union, they should also be shipped direct from the country of origin.

ISO and BS standards applicable to nutmeg and mace oils are:

- ISO 7355 - 1985 Nutmeg and Sassafras Oil
- BS 2999/37 : 1971 East Indian Nutmeg Oil
- BS 2999/38 : 1971 West Indian Nutmeg Oil
- ISO 4734 - 1981 Mace Oil

EU regulations on essential oils set limits on the types of end uses in which each essential oil can be used. The relatively restrictive EU rules and, in particular, the listing of prohibited ingredients render market access more difficult for new suppliers.

The Japanese Food Sanitation Law regulates essential oils used in the food and beverages industries. Details can be obtained from JETRO (see Nutmeg and Mace: Japan).

In the case of aroma chemicals, the United States issues a list of flavor substances that are classified as "*Generally Recognized as Safe* (GRAS)". This list is compiled by the Flavor Extracts Manufacturers Association (FEMA) and is acknowledged by the US Food and Drug Administration (FDA).

Lists of permitted and prohibited ingredients are also issued for cosmetics and toiletries.

Tariffs on imports of myristic acid are as follows:

EU	7.1% (MFN rate)
USA	Free (GSP scheme)
Japan	Free (GSP scheme)

A certificate of origin is required to benefit from preferential tariff regimes.

Prices

Supplies of nutmeg and mace oils are directly dependent on the availability of the raw materials for processing. Given the current supply situation for nutmegs, supplies of the oils are low. In 1988 spot prices in the United States for East Indian nutmeg oil, which generally is less expensive than West Indian oil, were reported at around US\$ 32/kg. In 1991 corresponding prices were at US\$ 11/kg. Since then prices have showed a small increase and in 1993 spot prices were quoted at US\$ 13.5/kg. Current spot prices for Indonesian distilled nutmeg oil in drums range from US\$ 6 to US\$ 6.50 per pound (Chemical Marketing Reporter, June 6 1994).

Prices for myristic acid were quoted at US\$ 1.15 and US\$ 1.23 per pound (truckload) from the same source.

Packaging

Low volume oils such as nutmeg and mace can be shipped in drums with capacities ranging between 25 litres and 100 litres. Exporters should ensure that drums used for the storage and transportation of the essential oils are:

- ◆ impermeable to minimize loss through evaporation or oxidation,
- ◆ thoroughly cleaned to remove all traces of impurities which could alter the olfactory and taste characteristics of the oils,
- ◆ correctly sealed and have adequate air space between the surface of the oil and the top of the container.

During storage and transportation, the oils should be protected from light and stored at a temperature not exceeding 25°C.

Myristic acid is packed in bags.

Market prospects

The flavorings sector is a growth market despite increasing regulation on food additives and permitted ingredients.

Given the current low prices for nutmegs in particular for low quality nutmegs used for essential oil distillation, supply of nutmeg and mace oil is limited as farmers switch over to more profitable crops. This has resulted in firmer prices for both nutmeg and mace oils but direct supply is unlikely to increase substantially in 1994. Stocks held of these oils will probably keep the market stable in the immediate to short term.

Myristicin has received negative publicity recently with findings that the consumption of cola drinks caused genetic material to be damaged in the liver of mice. Studies would be necessary to determine whether human health could be affected by the presence of myristicin in food and drink products, even though it is unlikely.

According to available data, US imports of all natural fatty acids are limited as the US is a major producer.

Consumption of fatty acids in general is in decline in the European Union. This is attributed to the loss of markets in Eastern Europe, and changes in the use of fatty acids in industrial applications, specifically the detergent sector. This decline is expected to continue in the short term. No specific information was available concerning myristic acid or lauric acid.

The Japanese market for fatty acids has been increasing since the mid-1980s, importing over 12 thousand metric tons of myristic, lauric and capric acid in 1992, up from an estimated 1,000 metric tons in 1983.

There could, therefore, be a potential market for myristic acid from nutmeg butter given the wide industrial applications of the fatty acid. However, with the monopoly Indonesia and Grenada have on nutmeg production for spices and, to a lesser extent, for essential oils, it would seem that little research or investment has gone into exploring other commercial uses for nutmegs despite the fact that poor quality or rejected nutmegs are used for the production of nutmeg butter. It should be noted that the major producers of myristic acid and derivatives are multinational enterprises with production facilities for coconut and palm kernel oil in the Far East, such as Akzo Chemicals (Netherlands), Rhône-Poulenc (France), Procter & Gamble (USA), Witco Corporation (USA) and Unichema (Unilever Group).

Useful addresses

1. International organizations

International Federation of Essential
Oils and Aroma Trades (IFEAT)
16/16 Dufferin Street
London EC1Y 8PD
United Kingdom
Tel: (071) 253 9421
Fax: (071) 250 0965

International Organization of the
Flavour Industry (IOFI)
8, rue Charles-Humbert
1205 Geneva
Switzerland
Tel: (022) 321 3548
Fax: (022) 781 1860
*(Also the seat of the International
Fragrance Association - IFRA)*

2. European Union

Office of Consumer Protection
10, rue Guimard
1040 Brussels
Belgium

Cosmetic, Toiletry & Perfumery
Association
35 Dover Street
London W1X 3RA
United Kingdom
Tel: (071) 491 8891
Fax: (071) 493 8061

Industry Association for Personal Care
and Laundry Products
*Industrieverband für Körperpflege
und Waschmittel (IKW)*
Karlstrasse 21
6000 Frankfurt/Main 1
Germany
Tel: (069) 255 6323
Tlx: 414299 vcif d

European Association of Fatty
Acid Producers
*Association européenne des
Producteurs d'acides gras (APAG)*
250, avenue Louise
Bte. 111
1050 Brussels
Belgium
Tel: (2) 648 8290
Fax: (2) 640 1981

3. USA

Flavor Extracts Manufacturers
Association (FEMA)
Suite 700
900 17th Street NW
Washington, DC 20006

Food & Drug Administration (FDA)
200 C Street SW
Washington, DC 20204
*(Catalog of Information Materials for
the Food & Cosmetics Industries)*

Essential Oil Association of USA Inc
(EOA)
60 East 42nd Street
New York, NY 10017

4. Japan

The Japanese Standards of
Cosmetic Ingredients
Yakuji Nippo Ltd
1-11 Kanda Izumicho
Chiyoda-ku
Tokyo 101

Japan Perfumery & Flavoring
Association
Nitta Building
8-2-1 Ginza, Chuo-ku
Tokyo 102

Japan Flavor & Fragrance
Manufacturers Association
Nomura Building
14-14 Nibonbashi
Kodenmachi, Chuo-ku
Tokyo 103

Price information

The Public Ledger
12-13 Clerkenwell Green
London EC1R 0DP
United Kingdom
Tel: (071) 490 1969
Fax: (071) 490 0859
*Weekly average prices for essential
oils, i.a., in UK and major European
markets*

Chemical Marketing Reporter

80 Broad Street
New York, NY 10004-2203
USA
Tel: (212) 248 4177
Fax: (212) 248 4903
*Weekly average prices for essential oils
and myristic acid in the USA*

The following brokers/agents, among others, provide price and market information to their clients:

Beacon Ltd
70 Florall Avenue
Murray Hill, NJ 07974-1511
USA
Tel: (908) 464 5800
Fax: (908) 464 0002

George Uhe Co. Inc.
12 Route 17 N
Paramus, NJ 07653
USA
Tel: (201) 843 4000
Fax: (201) 843 7517

Fuerst Day Lawson Limited
St. Clare House
30-33 Minories
London EC3N 1LN
United Kingdom
Tel: (071) 488 0777
Fax: (071) 488 9927

John Kelly's Limited
Prescot House
Prescot Street
London E1 8BB
United Kingdom
Tel: (071) 481 2110
Fax: (071) 480 5030