World Market for Papaya

RAP Market Information Bulletin No. 12

The papaya tree, *Carica papaya*, is native to the lowlands of Central America but is now grown all over the world, especially in the tropics. Fruits are round to oval-shaped and have a smooth,thin, pale yellow to reddish-orange skin. The flesh is yellow-orange to red in color, and is firm and sweet in the varieties most commonly traded. Dozens of seeds are clustered in the center of the fruit. Brazil is the world's leading producer and supplier of this product to world markets, but, with growing trade, new suppliers are likely to emerge. As postharvest and transport technologies improve, this highly perishable and easily injured fruit is growing in popularity on world markets.

Production and Exports

In 1993, the Food and Agriculture Organization of the United Nations estimated that almost 5.7 million metric tons of papaya fruit were harvested worldwide (see Table 1). This amount is almost double that harvested in 1980, with most of the increase taking place in Brazil and India.

United States

In the **United States**, production of papaya is concentrated in the Hawaiian islands. In 1994, 256 farms in the state of Hawaii produced 28,000 metric tons (62 million pounds) of papayas, with a total value of US$13.8 million (see Table 2). Approximately 90 percent of this production goes to the fresh market. Production has decreased by 5,400 metric tons since 1989, as a result in part of papaya ringspot disease.

Hawaii exports both regular and red flesh cultivars. In 1994, Hawaiian exports reached 8,368 metric tons, worth US$15.4 million (see Tables 3 and 4, and Figure 1). About 5,600 metric tons, or two-thirds of total U.S. exports, were destined for Japan, with 2,300 metric tons going to Canada. Exports have shrunk by about 3,250 metric tons since 1990, but export value has increased by almost US$2 million.

Latin America and the Caribbean

Mexico is the largest producer in the region, harvesting 343,000 metric tons of product in 1993.Mexico is the largest supplier of papaya to the United States and also exports to Canada. **Costa Rica** produced 21,000 metric tons of papayas and exports to the United States and the Netherlands. **Jamaica** produced 5,000 metric tons of papayas and exports primarily to the United States and the United Kingdom. The **Dominican Republic** produced 16,000 metric tons and exports primarily to the United States. Although production statistics are unavailable for **Belize** and **Haiti**, both export papaya to the United States. **Cuba** produced 30,000 metric tons, but does not supply any major markets.

Brazil is the largest producer of papayas in the world, and the dominant supplier to Europe. In 1993, Brazil produced 1.75 million metric tons of papayas, more than three times 1980 levels. The next largest producers in South America are **Peru** and **Colombia** at 62,000 metric tons each. Other producers include **Venezuela** (35,000 metric tons), **Bolivia** (20,000 metric tons), **Ecuador** (15,000 metric tons), **Paraguay** (12,000 metric tons), **Chile** (5,000 metric tons), and **Argentina** (2,000 metric tons). Brazil is the only country to supply any major markets, however.

Africa

Nigeria and **Zaire**, with harvests in 1993 of 500,000 and 210,000 metric tons respectively, are the

largest papaya producers in Africa but do not export product to Europe. The situation is the same for **Mozambique**, which produced 40,000 metric tons. **South Africa** produced 22,000 metric tons in 1993, and exports 10 percent of this crop to Europe. Production statistics are unavailable for **C“te d'Ivoire** and **Burundi**, which both export product to France.

India is the second-largest papaya producer in the world after Brazil, with 1.2 million metric tons of production in 1993. This volume represents a substantial increase from 1980, when only 360,000 metric tons were produced. India supplies product to the Middle East. **Indonesia** is the next largest producer in Asia, with 358,000 metric tons in 1993. **China** produced 125,000 metric tons of papayas, and the Philippines 97,000 metric tons. The **Philippines** sends small amounts of papaya to Japan. Other producers of papaya in Asia include **Vietnam** (56,000 metric tons), **Malaysia** (40,000 metric tons), **Bangladesh** (31,000 metric tons), **Samoa** (10,000 metric tons), **Pakistan** (7,000 metric tons) and **Australia** (5,000 metric tons). Malaysia supplies product to Singapore, Hong Kong, Europe, and the Middle East. Thailand supplies product to Hong Kong, Europe, and the Middle East. Vietnam and Indonesia send small amounts of product to Europe, as well as to regional Asian markets. Australian and Indian papayas are also sold in Persian Gulf markets.

Markets

Major import markets for papaya are characterized by one dominant supplier. This is the case in the United States, which receives the vast majority of papayas from Mexico; in Europe, which imports mainly from Brazil; and in Japan, where Hawaiian papayas are ubiquitous. In general, markets for papaya have shown healthy, steady growth, and many importers are optimistic about the future for this product. A key to the success of papaya in the future will be refinements in postharvest and transportation technology, which will keep this easily injured fruit in good condition for longer periods of time.

United States

The United States imported 18,677 metric tons of papayas in 1994, a significant increase over 1992, when only 10,475 metric tons were imported (see Table 5). U.S. domestic consumption (production plus imports less exports) of papayas for 1994 was 72,309 metric tons, compared with 73,589 metric tons in 1992. In 1994, the U.S. papaya import market was worth US$12.8 million (see Table 6). In the first nine months of 1995, imports surged to 26,729 metric tons worth US$16.4 million.

Mexico is the leading supplier of papaya to the U.S. market. Imports from Mexico in 1995 are likely to triple 1992's level of 8,444 metric tons. Mexican papayas are inexpensive compared with Hawaiian or other imported product, and Mexican growers are easily able to supply additional product as needed. Other leading suppliers to the United States include Jamaica (1,174 metric tons worth US$2.0 million in 1994), Belize (1,797 metric tons worth US$1.1 million), and the Dominican Republic (355 metric tons worth US$324,000). Costa Rica, Thailand, and Haiti supply smaller amounts of product on a more sporadic basis.

Prices at New York's Hunt's Point wholesale market for 1995 show that Hawaiian papayas are the most expensive, selling for as high as US$25.00, but usually between US$14.00 and US$19.00, for a 10- pound box (see Table 7). Product from the Dominican Republic sold in April and May for about US$11.75 per 10-pound box, while Jamaican product fluctuated between US$6.00 and US$9.00 per 10-pound box. Mexican papayas, in 40-pound boxes, sold for between US$15.00 and US$24.50 in other words, about four times cheaper than Hawaiian papaya.

Europe

In 1994, imports of papaya into the four major market countries (the UK, France, the Netherlands and Germany) totaled 9,307 metric tons worth US$16.9 million. In terms of volume, this is almost double the amount imported in 1988 (see Figure 2). Brazil is by far the biggest supplier to Europe, although Jamaica, Costa Rica, C“te d'Ivoire, and Hawaii also supply substantial amounts of product. European importers note there is considerable potential for papayas, if they can be properly shipped and handled.

The **Netherlands** is the largest European importer of papaya, with imports of 3,505 metric tons worth US$4.5 million in 1994 (see Tables 8 and 9). Over half of this amount (2,403 metric tons) was supplied by Brazil, up almost 600 metric tons from the previous year and more than tripling since

1988. Costa Rica and Jamaica, at 610 and 136 metric tons, respectively, continued to increase their exports to the Netherlands. Smaller suppliers included Malaysia, Burundi, South Africa, and Hawaii.

Jamaica and Brazil supplied product all year long, whereas Costa Rica supplied from January through July. Importer selling prices in 1995 showed product from Brazil, Burundi, and C“te d'Ivoire generally between 6.00 and 7.00 fl per kilogram, while Jamaican product mostly hovered between 4.00 and 5.00 fl per kilogram, and sea-shipped Brazilian product sold for between 3.00 and 4.50 fl per kilogram (see Table 16).

The second-largest importer of papayas in Europe is the **United Kingdom** (see Tables 10 and 11). In 1994, the British imported 2,484 metric tons of product worth US$4.3 million. This represents only a small increase from 1993, but is almost double the volume of 1988. As with the Netherlands, Brazil was the largest supplier, with 1,095 metric tons. Jamaica supplied 944 metric tons, but the import value for Jamaican product was only half that of Brazilian product. Smaller suppliers included Trinidad, Malaysia, and the United States.

U.K. importers sourced product from Brazil and Jamaica year-round, augmenting this with sporadic imports of U.S. and other product. Brazilian papayas are more expensive than Jamaican, with importers selling the Brazilian in 1995 for between œ1.70 and œ3.15 per kilogram while the Jamaican sold for between œ1.25 and œ2.00 per kilogram. In both cases, prices were generally higher during the summer months.

Germany is the third-largest European importer of papayas, with imports of 2,314 metric tons in 1994 worth US$10.3 million (see Tables 12 and 13). In terms of volume and value, this was more than in 1994, but less than in both 1991 and 1992. In 1994, German importers sourced almost half of all their papayas through the Netherlands. The rest came primarily from Brazil (598 metric tons), the United States (300 metric tons), and Jamaica (96 metric tons). Thailand sent 73 metric tons, and other suppliers included Ghana, Belize, and Vietnam.

Supply from the United States and Brazil arrived steadily all year long, whereas product from Jamaica arrived mainly during April through June. German importer prices for 1995 for Brazilian air-shipped papaya were between DM5.70 and DM6.85 per kilogram, while prices for sea-shipped product ranged between DM2.75 and DM4.30 per kilogram. In the Hamburg wholesale market, Hawaiian papaya was more expensive than Brazilian or Jamaican (see Table 17).

France was the fourth-largest European importer of papaya in 1994, bringing in 1,004 metric tons worth US$2.8 million (see Tables 14 and 15). Again, Brazil was the largest supplier, accounting for 40 percent of total imports (407 metric tons). C“te d'Ivoire was the next-largest supplier, accounting for 322 metric tons. About 75 metric tons were brought in from the Netherlands. Other, smaller suppliers included Spain, Thailand, Vietnam, Malaysia, Burundi and Tunisia.

C“te d'Ivoire and Brazil supplied product year-round, peaking during the winter months (September-December) and lowest during the summer (June-August). Importer prices in 1995 for Ivorian and Brazilian product were roughly the same, usually between FF19.00 and FF24.00 per kilogram.

Middle East

Import statistics are unavailable for the Middle East, but price statistics indicate that product is received from many different countries to serve both the high-end and the low-end markets (see Table 18). In 1995, **Bahrain** imported papayas from Australia, at US$3.95 per kilogram, and from India, at US$1.22 per kilogram. **Kuwait** also imported product from Australia, at US$1.97 and US$3.85 per kilogram, and from Hawaii, at between US$6.67 per kilogram in the last four months of the year and at US$8.33 per kilogram in preceding months. **Saudi Arabia** imported papayas from India, at US$1.52 per kilogram, while traders in **Dubai** imported product from Malaysia, at between US$2.22 and US$3.13 per kilogram.

Asia

Japan imported 5,150 metric tons of papayas in 1994, worth • 1.8 billion. All but 11 metric tons were from the United States. Imports in 1994 were up over 1993, but were lower than in the previous three years in both volume and value (see Tables 19 and 20). Some of this was, of course, the result of the appreciation of the yen, which made imported products more expensive. Other

countries supplying small amounts of product to Japan over the last five years have included the Philippines, Mexico, and Fiji. Wholesale prices for Hawaiian papayas in Japan averaged about • 600 per kilogram. In 1993, **Singapore** imported 21,960 metric tons of product worth US$10.6 million, all from neighboring Malaysia. **Hong Kong** imported 13,296 metric tons of papayas worth HK$101.8 million in 1993. Most of Hong Kong's imports come from Malaysia and Philippines (see Figure 3).

Grades and Standards

these are available on the hardcopy version of the bulletin. To order, see below.

Sources of Technical Information

Ahmed, A.; Biswas, M.; Amzad Hossion, A.K.M. "Effect of lime and boron on yield and quality of Papaya fruit." Acta Horticulturae. Wageningen : International Society for Horticultural Science. Oct. 1992. v. 2 (321) pp. 653-658.

Ali, Z.M.; Lazan, H.; Ishak, S.N.; Selamat, M.K. "The biochemical basis of accelerated softening in papaya following storage at low temperature." Acta Horticulturae. Wageningen: International Society for Horticultural Science. June 1993. (343) pp. 230-232.

Arisumi, Toru. Test shipments of papayas with special reference to storage decay control. Technical bulletin (Hawaii Agricultural Experiment Station); no. 29. Honolulu, Hawaii: Hawaii Agricultural Experiment Station, University of Hawaii, 1956. 16 pp.

Awada, M. (Minoru); Ikeda, Warren S. Effects of water and nitrogen application on composition, growth, sugars in fruits, yield, and sex expression of the papaya plants (Carica papaya L.).Technical bulletin (Hawaii Agricultural Experiment Station); no. 33. Honolulu, Hawaii: Hawaii Agricultural Experiment Station, University of Hawaii, 1957. 16 pp. : ill.

Bose, T.K.; Mitra, S.K.; Chattopadhyay, P.K. "Optimum plant density for some tropical fruit crops." Acta Horticulturae. Wageningen: International Society for Horticultural Science. Feb. 1992. (296) pp. 171-176.

Camara, M.M.; Diez, C.; Torija, M.E. "Changes during ripening of papaya fruit in different storage systems." Food Chemistry. Essex: Elsevier Applied Science Publishers. 1993 (pub. 1992). v. 46 (1) pp. 81-84.

Chan, Y.K. "Progress in breeding of F1 papaya hybrids in Malaysia." Acta Horticulturae. Wageningen: International Society for Horticultural Science. June 1992. (292) pp. 41-49.

Edna, P.; Rose, M. "Influence of fruit coating on Papaya quality." Acta Horticulturae. Wageningen: International Society for Horticultural Science. Oct. 1992. v. 2 (321) pp. 659-666.

Gavinlertvatana, P. "Commercial micropropagation of tropical fruit trees." Acta Horticulturae. Wageningen: International Society for Horticultural Science. Oct. 1992. v. 2 (321) pp. 574-578.

Giacometti, D.C. "Papaya breed-ing." Acta Horticulturae. Wageningen: International Society for Horticultural Science. Mar. 1987. (196) pp. 53-60.

Henderson, D. "Exotic produce: the changing market in the UK." British Food Journal. Bradford: MCB University Press. 1992. v. 94 (8) pp. 19-24.

Jordan, M. "Micropropagation of papaya (Carica spp.)." Biotechnology, Agriculture and Forestry. Berlin, Germany: Springer-Verlag. 1992. (18) pp. 441-459.

Malo, S.E.; Campbell, C.W. The papaya. Fruit Crops Facts Sheet. Gainesville, Fla.: University of Florida, Agricultural Extension Service. 1986. (11) 3 pp.

Manshardt, R.M.; Zee, F.T.P. "Papaya germplasm and breeding in Hawaii." Fruit Variety Journal. University Park, Pa., American Pomological Society. July 1994. v. 48 (3) pp. 146-152.

Nishijima, K.A.; Miura, C.K.; Armstrong, J.W.; Brown, S.A.; Hu, B.K.S. "Effect of forced, hot-air treatment of papaya fruit on fruit quality and incidence of postharvest diseases." Plant Disease. St. Paul, Minn.: American Phytopathological Society. July 1992. v. 76 (7) pp. 723-727.

Quintana, M.E.G.; Paull, R.E. "Mechanical injury during postharvest handling of Solo' papaya fruit." Journal of the American Society of Horticicultural Science. Alexandria, Va.:. Sept. 1993. v. 118 (5) pp. 618-622.

Suzuki, K.; Tajima, T.; Takano, S.; Asano, T.; Hasegawa, T. "Nondestructive methods for identifying injury to vapor heat-treated papaya." Journal of Food Science. Chicago, Ill.: Institute of Food Technologists. July/Aug 1994. v. 59 (4) pp. 855-857, 875.

Timm, E.J.; Brown, G.K. Impacts recorded on avocado, papaya, and pineapple packing lines. Applied Engineering for Agriculture. St. Joseph, Minn.: American Society of Agricultural Engineers. July 1991. v. 7 (4) pp. 418-422.

Tsang, M.M.C.; Fujii, J.K. "Heated air treatment for meeting quarantine regulation with bulk papaya fruits." Applied Engineering for Agriculture. St. Joseph, Minn.: American Society of Agricultural Engineers, 1985. Nov 1992. v. 8 (6) pp. 835-839.

Yeh, S.D. "Control of ringspot disease of papaya by induced mild virus strains." Acta Horticulturae. Wageningen: International Society for Horticultural Science. July 1990. (275) pp. 753-760.

The RAP Market Information Bulletin is produced monthly by the USAID-funded Asia Regional Agribusiness Project (RAP), implemented by Development Alternatives, Inc. (DAI). The bulletin provides information on competitors, importers, and prices for selected fresh horticultural products produced in developing Asian countries. This issue was written by Robert Galinsky and Nancy Laws of Fintrac Inc. The price of a single issue is US$10; a full set of 12 costs US$100, which includes a three-ring binder for storing the bulletins. To subscribe to the RAP Market Information Bulletin or other market information products of RAP (including our Market Asia newsletter), contact Karen Schloeman, RAP Market Information Assistant, Development Alternatives, Inc., 7250 Woodmont Avenue, Suite 200, Bethesda, MD 20814 USA (Tel.: 301-215-7014, Fax: 301-907-2655), e-mail: rap@dai.com