

Coffee

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Department of Agricultural and Resource Economics
College of Tropical Agriculture and Human Resources
University of Hawaii

By

Kevin M. Yokoyama, Stuart T. Nakamoto,
and Kulavit Wanitprapha



CROP PROFILE

SPECIES

- Over 70% of the world coffee supply is arabica coffee (*Coffea arabica*), slightly more than 20% is robusta coffee (*C. canephora*), and the rest is from *C. liberica* and *C. excelsa* and other species.
- All high-quality (specialty) coffees come from *C. arabica*, but quality is affected by the processing method. Examples are Jamaican Blue Mountain coffee and Kona coffee, both of which are selectively picked when ripe, then processed by the wet method. Brazilian coffee also comes from *C. arabica*. This coffee is mass-harvested by strip-picking the coffee berries at various stages of development and is processed by the dry method, resulting in a lower quality coffee.
- Robusta coffee does not possess the aroma or flavor of arabica. It is popular for the manufacture of instant coffee because it is relatively cheap and gives higher yields of solubles than arabica.

PRODUCTIVITY

- Coffee berries can be first harvested three to four years after planting. Normal yields can be expected after another two to three years. The economic life of the coffee tree can be maintained for 50 years, but yields normally start to decline 15 years after planting.
- Hawaii has one of the highest coffee yields in the world. The FAO Production Yearbook shows that the green coffee yield averages in 1986 for major coffee producers Brazil, Colombia, and Indonesia were 397 lb/ac, 670 lb/ac, and 604 lb/

ac, respectively. Hawaii's was substantially higher at 1166 lb/ac. Exceptional yields of 2682 lb/ac or more have been obtained in Hawaii, from advanced plantations in Brazil, and in the People's Democratic Republic of Yemen.

- For every 100 lb of clean, dried, unroasted coffee beans, 500 to 600 lb of coffee berries are needed. Unroasted coffee beans can be stored up to three years without a noticeable loss in quality.

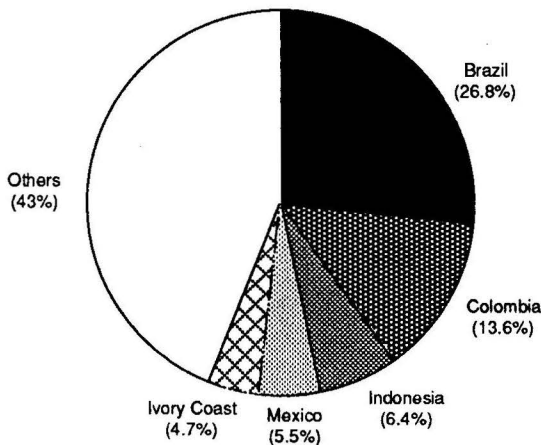
USES AND PRODUCTS

- Coffee beans can be roasted, ground, and brewed. In the Middle East, roasted coffee is ground into a powder, boiled several times, and sweetened with sugar to produce a small cup heavy with sediment. In southern Europe and Latin America, coffee is dark-roasted, nearly burned, and bitter. The thick brew is dribbled out of espresso machines and mixed with hot milk in a big bowl.
- Spray-drying and freeze-drying are methods of processing instant coffee. Freeze-drying, a newer method, provides a higher percentage of soluble yields and preserves the original flavor of coffee better than spray-drying.
- Caffeine extracted from coffee beans is used in cola beverages and medicines. Beans contain approximately 1.5% caffeine.
- Coffee can now be decaffeinated naturally, using water without solvents.
- Other potential uses of coffee berries include fish food, a type of plastic (coffelite), and as a source of fiber for the diet much like alfalfa and bean sprouts.

WORLD SUPPLY AND DEMAND

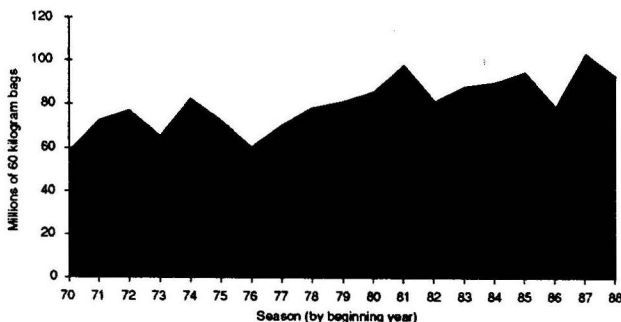
SUPPLY

- World coffee production has steadily increased from 59.2 million bags (one bag = 60 kg = 132 lb) in 1970-71 to 93.3 million bags in 1988-89.
- Brazil is the world's largest coffee producer. During the early 1900s, Brazil produced about 80% of the world's coffee, but by 1988-89 Brazil's share of production had been reduced to about 27%. Other major producers include Colombia, Indonesia, Mexico, and the Ivory Coast.



World Major Coffee Producers, 1988-89

- Harvested area of coffee in Brazil amounted to about 6.4 million acres in 1987, around 2.3 million acres more than the entire land area of the state of Hawaii.
- Frosts or droughts damaging Brazilian coffee crops severely affect world production. During the period between 1961 and 1980, a World Bank study of the world coffee market showed that annual production fluctuations averaged 14.1%. When Brazilian production was excluded, fluctuations were only 5.2%.

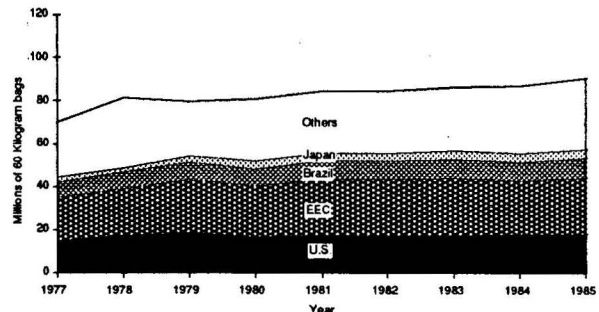


World Coffee Production

- Either an increase in demand for coffee or a production shortfall can be met in the short term by releasing coffee stocks. For 1988-89, estimates from the USDA indicate that beginning world coffee stocks are about 47.6 million bags, more than half of world coffee production for the year.
- The International Coffee Organization (ICO) administers an International Coffee Agreement (ICA) whose primary objective is to stabilize coffee prices through a system of export quotas. Members of the agreement, however, often dispute the allocation of quotas.
- World coffee prices, according to the ICO daily composite indicator price, averaged \$1.14/lb in November 1988. During 1987, the average price was \$1.08, a substantial decline from 1986, when the average price was \$1.71.

DEMAND

- World coffee consumption has increased from 70.8 million bags in 1977 to 90.6 million bags in 1985, an increase of 28%.
- Consumption is concentrated primarily in the developed market economies of the world. From 1980 to 1985, the United States, the European Economic Community, and Japan accounted for 48% of world consumption. In 1985, the major consuming countries were the United States (18.38 million bags), Brazil (9 million), Federal Republic of Germany (6.96 million), Italy (4.70 million), Japan (4.29 million), the United Kingdom (2.31 million), the Netherlands (2.27 million), Colombia (1.87 million), and Canada (1.86 million).
- Fluctuations in price, at least when small or short-lived, have relatively little effect on demand. Only when the price is excessively high does strong consumer resistance develop, as in the period 1976-1978.



World Coffee Consumption

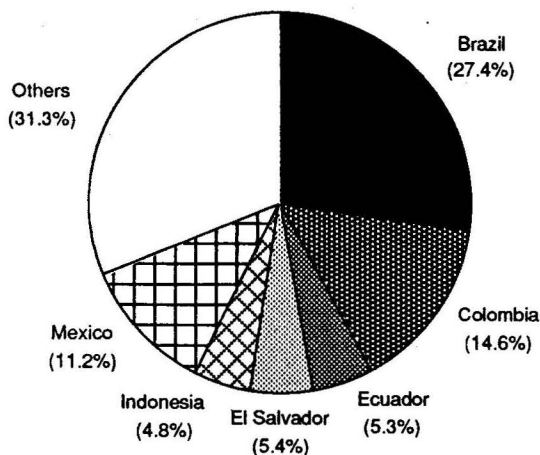
SELECTED MARKETS

THE UNITED STATES

- The United States is the world's largest coffee market, accounting for about 28% of world coffee imports in 1986.
- In 1988, the United States imported more than \$2.5 billion dollars' worth of coffee beans and coffee products. The major suppliers of green beans were Brazil, Colombia, Ecuador, El Salvador, Indonesia, and Mexico.

Type	1988 U.S. Imports	
	Quantity (1000 lb)	C.I.F. Value (\$1000)
Green	2,030,237	2,404,141
Roasted	49,682	70,510
Instant	47,320	112,625
Essence & Extract	3,042	9,822

- The United States has no tariff on green, roasted, or instant coffee.
- One-half to three-fourths of coffee in shipments to the United States are handled through trading firms, with the remainder purchased directly by processors who convert green beans into roasted and/or soluble coffee. Processors may obtain additional supplies from trading companies.
- In 1988, there were at least 100 importers of green beans, instant coffee, and roasted coffee in the United States.



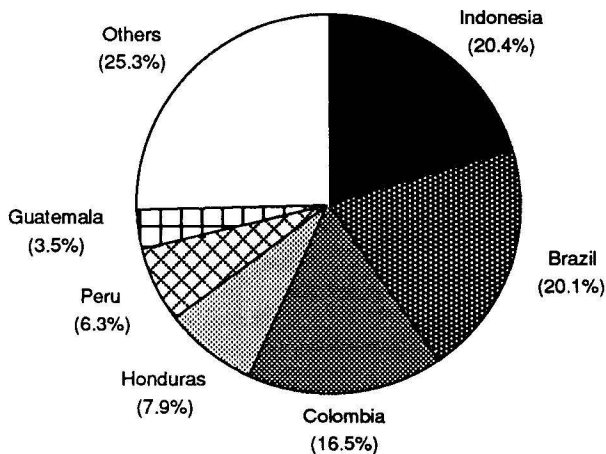
Major Suppliers of Green Coffee to the U.S., 1988

- General Foods, Nestle (including Hills Brothers, a subsidiary), and Procter & Gamble dominate the U.S. coffee market. During 1987, these firms combined for about 87% of the soluble coffee market share and 77% of the regular coffee market share. Some brand names under General Foods include Brim, Maxwell House, Sanka, and Yuban. Brand names for Nestle are Hills Brothers, Nescafe, and Taster's Choice. Procter & Gamble markets Folger's coffee.
- Out of every 10 cups of coffee consumed, eight were regular brewed coffee and two were soluble coffee in the United States during 1987. In addition, 77.8% of those age 60 and over were coffee drinkers, but only 33.1% in the 20-29 age group were.
- Per capita consumption of coffee declined in the United States from 3.12 cups per person per day in 1962 to 1.76 cups in 1987. Some segments in the coffee industry, however, have grown. Consumption of decaffeinated coffee has risen from 0.10 cup in 1962 to 0.43 cup in 1987, and gourmet coffee sales increased from \$420 million in 1986 to \$500 million in 1987.
- Coffee has been blamed for many health problems; however, the evidence on adverse effects of the beverage is inconclusive. For example, Framingham Heart Study researchers found no association between coffee and heart disease.

JAPAN

- Japan's coffee market has been growing substantially. While still small compared with the rest of the world's, consumption increased by 250%, from 1.22 million bags in 1970 to 4.29 million bags in 1985.
- In 1986, Japan imported more than 534 million lb of green coffee. In addition, smaller amounts of more highly processed coffee products were imported.

Type	1986 Japan Imports		
	Quantity (1000 lb)	Value (US\$1000)	Value (Mil. Yen)
Green	534,755	1,022,896	172,358
Roasted	1,090	4,172	703
Instant	14,946	78,475	13,223
Sweetened Coffee Extract	27,117	24,421	4,115
Coffee Extract w/o sugar	3,629	7,656	1,290



Major Suppliers of Green Coffee to Japan, 1986

- Of various coffee products, only green coffee has no import tariff. Other coffee products are charged varying rates of up to 35%, depending on agreements, trade regulations, and trading status of the exporting nation.
- Nestle (Japan) and Ajinomoto-General Foods together accounted for 92% of the market share in Japan's instant coffee market in 1986. Ueshima and Kimura coffee combined for 59% of regular coffee production during the same year. Other major manufacturers of regular coffee are Art Coffee and MJB Sales (Japan).
- Ajinomoto introduced self-heating coffee. The coffee, contained in a can within a can, is heated when a tab is pulled and quicklime mixes with water in the outer shell, causing the temperature to rise.
- In Japan, chilled coffee is sold in cans through vending machines. Canned coffee sales have recently exceeded US\$3.5 billion. Major canned coffee manufacturers are Coca-Cola (Japan), Ueshima Coffee, Pokka Corp., and Daido.
- Per capita consumption of various types of coffee increased in Japan between 1980 and 1985: from 3.8 cups per week to 5.3 cups (39.4% increase) for instant coffee; from 2.2 cups to 2.7 cups (22.7% increase) for regular coffee; and from 0.6 cup to 1 cup (66.6% increase) for canned coffee.

- In Japan, tea is the most popular nonalcoholic beverage, but coffee is a close second. In 1985, 92% of the populace drank tea, while 83% consumed coffee.

COFFEE IN HAWAII

- About a hundred years ago, more than 13,000 acres of coffee were grown statewide. Now, there are about 2600 acres, mostly in the district of Kona on the Big Island.
- In 1988-89, Hawaii produced 1.9 million lb of coffee at a value of \$5.7 million.
- Hawaii accounted for approximately 0.01% of world coffee production in 1988-89.
- There are six major processors of coffee berries in Kona. Two are marketing cooperatives; the others are private firms.
- Based on 1986 estimates of sales value, the markets for Kona coffee are 65% U.S. Mainland, 25% Hawaii, 8% Japan, 1% Canada, and 1% Western Europe.
- Kona coffee is marketed as a high-quality specialty item from Hawaii. Its distinctive aroma, flavor, and developed regional identity may make it less subject to foreign competition than some other Hawaiian products.
- There is renewed interest in coffee production outside the Big Island. For example, in a joint venture with Hills Brothers, Alexander & Baldwin is growing approximately 400 acres of coffee on Kauai, with plans for additional plantings. On Molokai, plans for large-scale plantings have been announced.
- Harvest labor accounted for 72% of total variable expenses for coffee production in Kona, according to a 1986 CTAHR study. To avoid the relatively high cost of manual picking, large-scale operations are beginning to use mechanical devices to harvest coffee berries.

Reference to a company or product name does not imply approval or recommendation of the product by the College of Tropical Agriculture and Human Resources, University of Hawaii.

Hawaii Agricultural Experiment Station, HITAHR, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa. Noel P. Kefford, Director and Dean.