



Commodity Profile: Pistachios

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History

Over the last 30 years, the U.S. pistachio industry has grown rapidly, becoming a success story for California agriculture—the major commercial pistachio producing state in the United States. Pistachio trees originated in the dry lands and desert climates of Asia Minor and were introduced in California in 1854, but the U.S. commercial industry did not develop until 1976 because of insufficient production techniques and a dominance of the world market by Iran.

When the United States pistachio industry did develop, it was largely a result of changes in public policies. When California almond growers lost the tax exemption and income-sheltered business status due to legislation in the 1960s, many of them turned to commercial pistachio production as a viable alternative. Then in 1979 because of the hostage crisis in Iran, trade restraints with Iran were imposed, opening the market to U.S. producers. Today, the United States is the second leading producer and exporter of pistachios behind Iran.

Industry Characteristics

Approximately 98 percent of U.S. pistachios are produced in California with the remaining 2 percent of production located in Arizona, New Mexico, and west Texas. In California, pistachios are predominantly grown in the San Joaquin Valley counties of Kern, Madera, Kings, Fresno and Tulare because of their desert-like climate and soil (ERS). While several varieties of pistachios exist, in California the Kerman variety accounts for nearly all pistachio production (99%) because of its large size, crisp kernel texture, and widely-split shells. Pistachios were the second largest U.S. tree nut crop in 2004 and worth \$438 million in value, behind almonds worth over \$2 billion.

Pistachio trees require several years of growth until they begin bearing nuts, with significant production occurring at 7-10 years and peak production occurring at 20-25 years (California Pistachio Commission). Like many stone fruit trees, pistachio trees are alternate bearing, so that a large crop one year is often followed by a lighter crop the following year.

Pistachios grow in grape-like clusters, with each nut's shell surrounded by a fleshy hull. The nut is ready for harvest in early fall when the hull takes on a rosy light hue and the interior shell splits open. Pistachios are mechanically shaken from the trees and are sent to processing mills to be hulled and dried. The hull must be removed and the nuts dried within 12-24 hours from harvest or the shell becomes stained (California Pistachio Commission). Before the U.S. industry developed equipment to decrease processing time imported pistachios often had dyed shells to hide staining.

The price of pistachios is dependent on the degree of shell splitting and the color of the kernel. Pistachios enclosed in shells that have not opened are worth less than those that have opened, specifically because if not split, the shells must be opened by mechanical means. Kernel color is another factor in determining value—the deeper the green of the kernel, the higher the value.

Like many tree nuts, pistachios are susceptible to aflatoxin contamination in the growing, harvesting and processing phases of production. Aflatoxins are toxic and carcinogenic compounds produced by a fungus which, dependent on temperature and humidity, can grow on the nut. The risk of aflatoxin contamination can be reduced through drying and proper storage.

Demand

Primarily, pistachios are marketed as in-shell nuts and are sold for domestic consumption as a snack food. A smaller portion of nuts, often those that are not usable for non-manufactured snacks because they have not split or are badly stained, are used as ingredients in candies, baked goods, ice cream, confectioneries and flavorings.

Pistachios are considered an impulse purchase. Recognizing this, the California Pistachio Commission marketing efforts have focused on introducing pistachios in attractive packages and high profile placements in grocery stores to increase sales (California Pistachio Commission).

Per capita consumption of pistachios has increased by as much as 60 percent since 1995 to 0.21 pounds in 2003 (Figure 1). In recent years, record crops of pistachios have decreased prices, contributing to increased consumption. However, U.S. consumption of pistachios remains low relative to other nuts (ERS). Pistachios compete with almonds, walnuts, peanuts and hazelnuts. In addition, nutritional research and advertising of the health benefits of nuts have helped increase consumption of all nuts. Pistachios in particular are rich in calcium, Vitamin B-6, thiamin, phosphorus, iron magnesium, copper, and fiber.

Exports

Globally, Iran remains the largest exporter of pistachios, accounting for roughly 70 percent of world exports in 2003 compared to the second largest exporter, the United States, with a share of 9 percent of the global export market (Food and Agricultural Organization of the United Nations (FAO)). In addition, Iranian exports to Hong Kong, the EU, and India have increased in recent years.

While domestic consumption has been increasing in recent years, so has the value of U.S. exports of pistachios. In 2004 approximately 40 percent of the California pistachio crop was exported. According to the U. S. Foreign Agricultural Service (FAS) statistics, export value of in-shell and shelled pistachios increased in value by 63 percent from 2003 to 2004, from \$91.4 million to \$149.2 million, and the total value of exports in 2004 reached \$179 million (Figure 2). The value of preserved pistachio exports was \$30.1 million in 2004.

In 2004, the leading destination for U.S. exports in terms of value was Luxembourg/Belgium, followed by the Netherlands, and France. Combined, these three countries accounted for over 55 percent of the total export market. Both the Netherlands and France have increased the amount of U.S. pistachio exports received by over 100 percent between 2003 and 2004. Conversely, Hong Kong, formerly a major destination for U.S. pistachio exports, has decreased the imports of U.S. pistachios substantially, from a high in 1995 of \$20 million to less than \$1.5 million in 2004.

Supply

U.S. production of pistachios has continued to expand since 1970 with increased yields per acre and increased number of acres planted. Although yield per acre is subject to the alternate bearing nature of pistachios, the California Pistachio Commission reported a record yield of 3,729 pounds per acre in 2004, compared to just over 1,000 pounds per acre in the early 1980s (Figure 3). Like yield, estimates for the total value of the U.S. crop are subject to the same alternating bearing cycle, but value of pistachio production has increased in recent years by over \$100 million between 2002 to 2004 and by nearly \$300 million between 2003 to 2004 (Figure 4).

Total bearing acreage of pistachios has been rising for decades. The greatest single year increase in bearing acreage was between 1978 and 1979, when bearing acreage increased from 3,500 acres to nearly 25,500 acres, an indirect result of the higher prices and increased U.S. demand. Since 1980, the number of bearing acres has steadily increased, reaching 93,000 bearing acres in production in 2004 (Figure 5).

Notwithstanding the substantial increase in U.S. production, Iran continues to be the world's leading producer of pistachios by two to three times the U.S. supply depending on the year. In 2004, Iran production was estimated at 672.4 million pounds while U.S. production was 347 million pounds. Other top producing countries in 2004 included, Syria accounting for 7 percent of world production, and Turkey and China accounting for 5 percent each (FAO).

Public policy, nut variety and rootstock, production methods, yield cycles, and weather conditions all can have dramatic effects on pistachio supply and quality. In Italy, Greece, and Asia Minor, non-irrigated orchards make for low yields compared to U.S. production, much of which is irrigated. Unfavorable weather, including mild winter temperatures and humid or wet summers can result in poor kernel development and quality as well as promote aflatoxin contamination. In addition, strong winds or rainfall

during blooming months can interfere with fertilization and thereby fruit set. The alternate bearing nature of pistachios, coupled with a prolonged period required for maturity can significantly affect total crop size from year to year (as well as longer cycles), creating variability in prices and total crop value. This has led to industry implementation of inventory building in high production years to compensate for subsequent years of decreased supply.

Prices

Changes in supplies of other major producing countries have the potential to significantly influence prices for US growers. In 2004, despite a record high U.S. crop, lower supplies from countries including Syria and Turkey led to increased prices. Historically however, California's large-crop years have corresponded with years of large global supplies and consequently prices have remained low for producers as shown in Figure 6. In 2004, prices in inflation-adjusted 2000 dollars averaged \$1.17 per pound.

Current Issues

Recently pistachio growers successfully led an initiative to establish a pistachio federal marketing order. The marketing order went into effect August 1, 2005 and is designed to increase demand for pistachios and enhance future grower returns through quality control regulations. Funded by assessments on California pistachio producers, the order establishes maximum tolerance levels for aflatoxin, mandates testing and certification for aflatoxin, and sets minimum nut quality standards. For more information on the market order see Gray et al. listed in sources.

Sources

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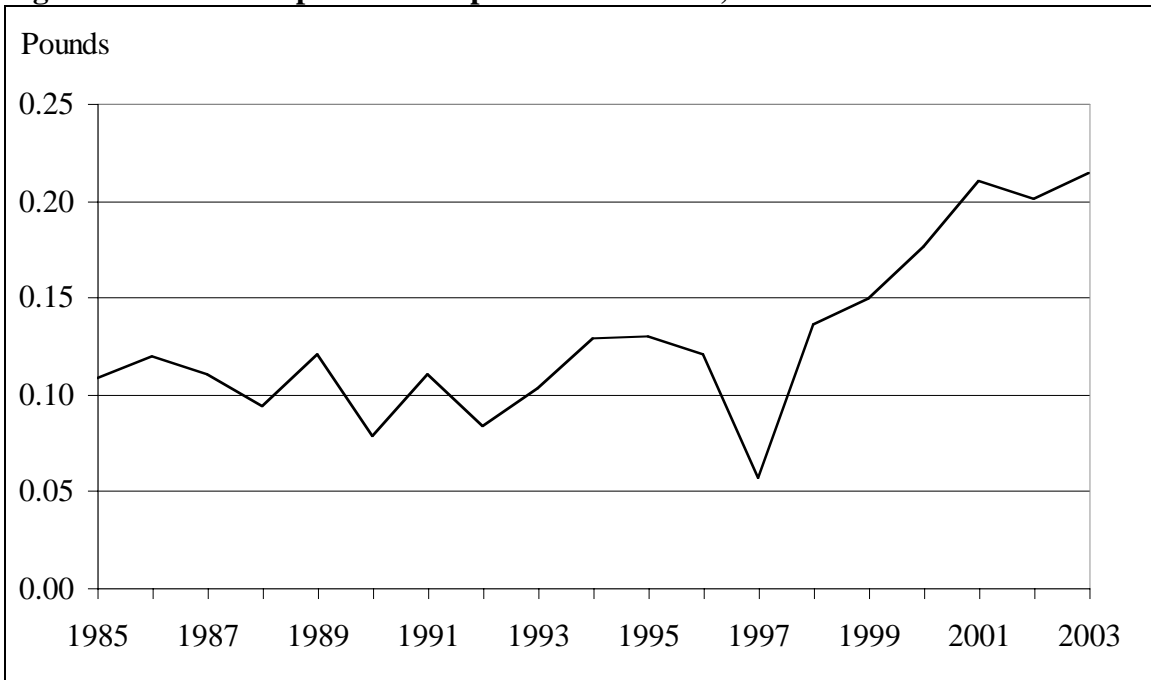
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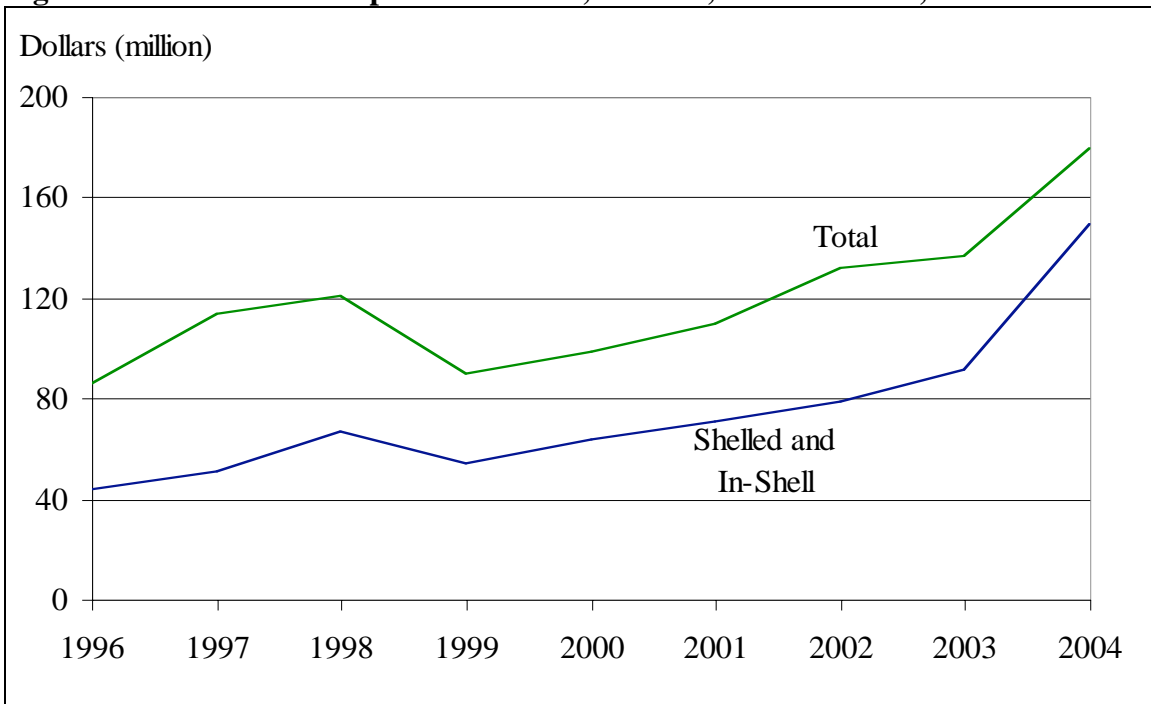
FIGURES

Figure 1. U.S. Per Capita Consumption of Pistachios, 1985-2003



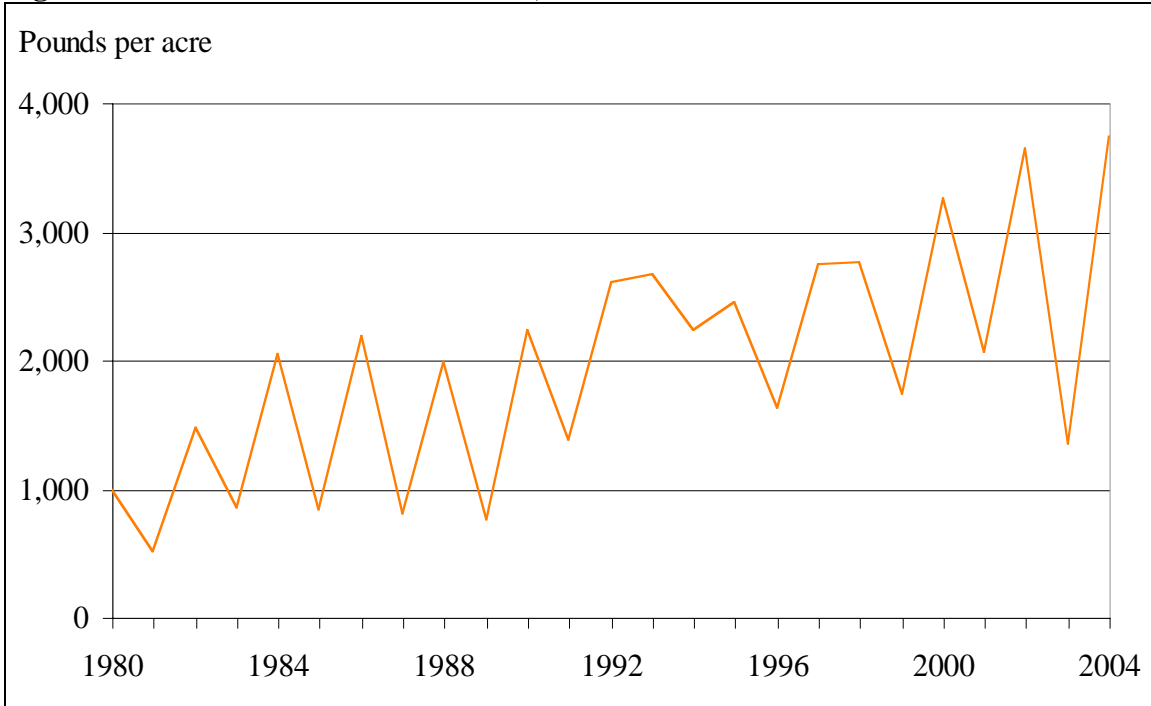
Source: USDA Economic Research Service, *Fruit and Tree Nut Yearbook*

Figure 2. U.S. Pistachio Exports of Shelled, In-Shell, and Preserved, 1996-2004



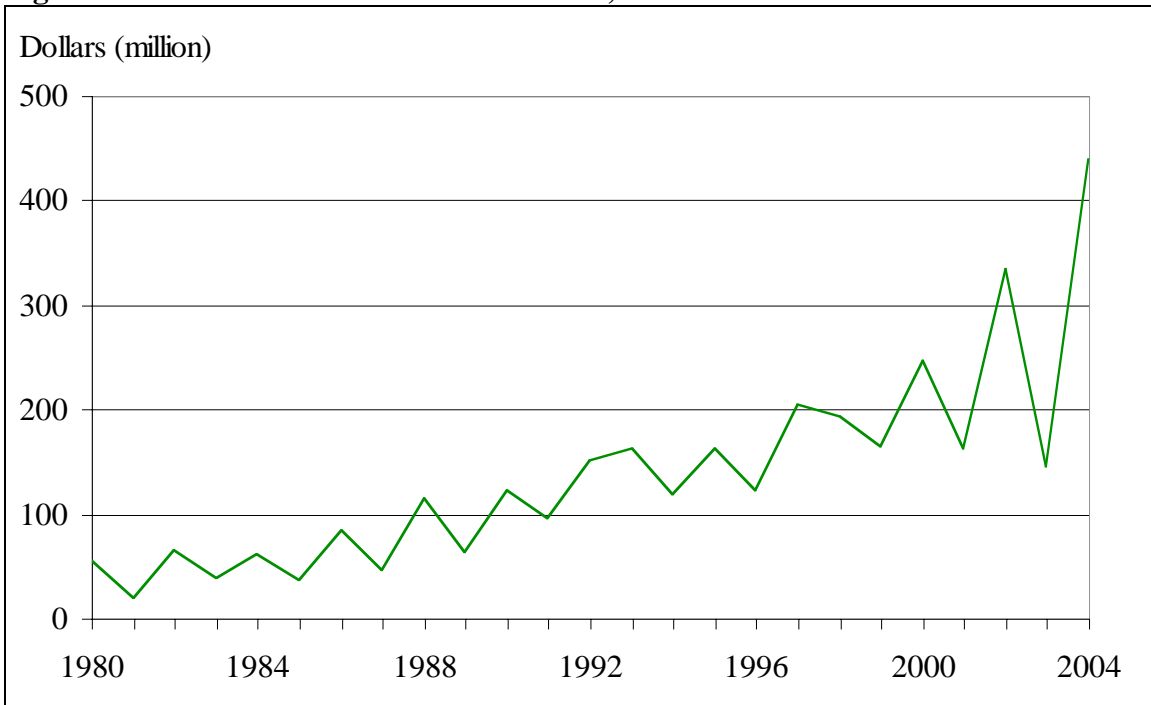
Source: USDA Foreign Agricultural Service

Figure 3. U.S. Pistachio Yield Per Acre, 1980-2004



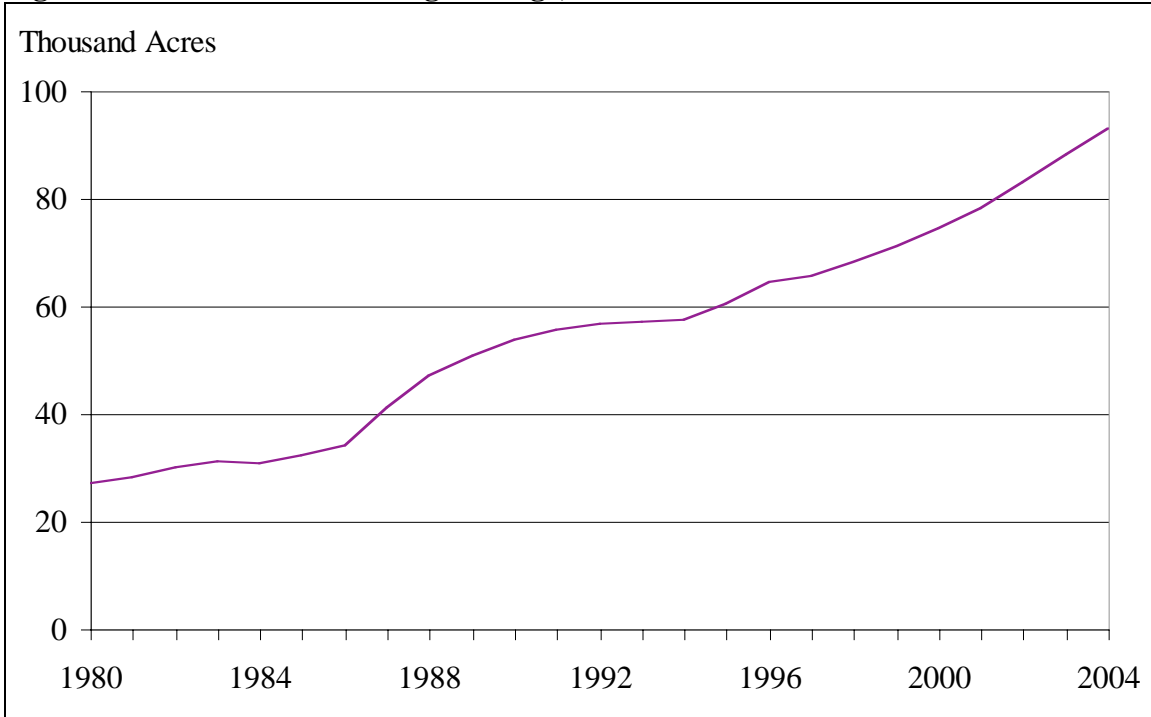
Source: USDA Economic Research Service, *Fruit and Tree Nut Yearbook*

Figure 4. U.S. Value of Pistachio Production, 1980-2004



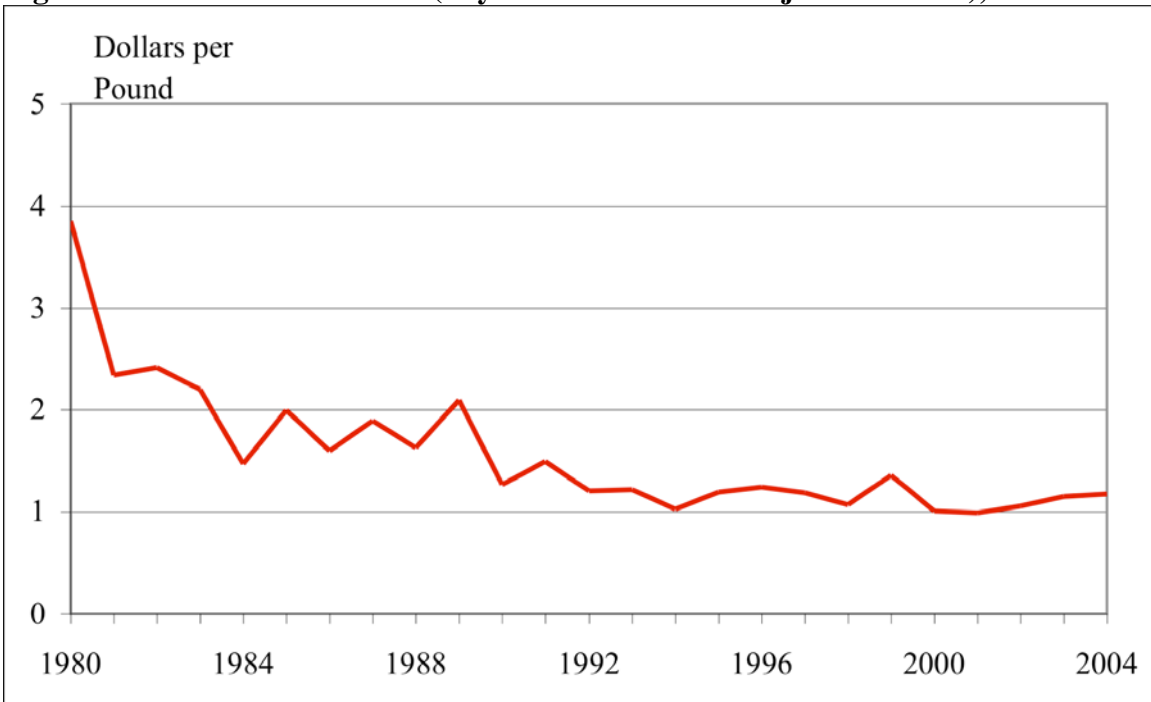
Source: USDA Economic Research Service, *Fruit and Tree Nut Yearbook*

Figure 5. U.S. Pistachio Bearing Acreage, 1980-2004



Source: USDA Economic Research Service, *Fruit and Tree Nut Yearbook*

Figure 6. U.S. Pistachio Prices (in year-2000-inflation-adjusted dollars), 1980-2004



Source: USDA Economic Research Service, *Fruit and Tree Nut Yearbook*