Sun-Maid Growers of California

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The data for each of the exhibits follows the figures at the end.

Assignment Question

1. What will be the key determinants of the price of raisins over time? How important is each determinant relative to other? Hint: Think about the things that impact supply and demand in this industry. An econometric model is not expected and as noted in the case, has a large standard error in forecasting and thus, these models are not used by those in the industry.
2. Assume that a federal marketing order no longer exists for raisins. How will the price of raisins occur in this industry?
3. Sun-Maid is a cooperative whose purpose is to market its members' raisins and those of its non-members. Sun-Maid plans short term and long term, and the supply and demand for raisins are of critical importance. Growers find valuable the predictability of industry supply and demand, and prices for raisins (and hence, the uses for their land). What recommendations do you have for Barry and individual raisin growers in order to keep Sun-Maid a viable business in the future?

Sun-Maid Growers has asked that students not contact them for information since they will be involved in the judging. Teams that contact them will be disqualified.

Sun-Maid Growers of California

Barry Kriebel, President of Sun-Maid Growers of California, pushed back his chair from the desk. It had been a long day. He was thinking about how he would explain how price discovery occurred in the U.S. (United States) raisin industry. A grower meeting was coming up and he knew that would be a question that would be asked by the membership. The U.S. raisin industry was concentrated within 50 miles of Fresno, California, in the Central Valley. Growers were faced with several challenges in recent years. The value of the land on which their vineyards lay was fairly significant and could be used for different uses including agricultural crops and economic development.

Raisins were a perennial crop and a vineyard might last 80 years before replanting was needed. New varieties were adapted to mechanization which significantly reduced the hand labor needed during the harvest. This was important in light of the immigration challenges being faced by migrant workers. However, this technology required a large capital outlay. Growers could plant other crops such as alfalfa hay which was needed by the large dairies in the south of Sun-Maid's trade territory. Oversupply in recent years had reduced the price of raisin grapes and this meant that some growers had exited the industry entirely.

As the world's largest dried fruit processor, the actions of Sun-Maid had a large impact on this industry. Predicting the price of raisin grapes was not easy. A federal marketing order regulated the supply of raisins. Furthermore, growers had the option of using their grapes for table (e.g., fresh markets) or wine (e.g., concentrate) purposes. If the prices in these two markets were strong, then a grower would not harvest the grapes for raisin purposes. However, the grower could decide to proceed with the expense of harvesting the grapes for raisin purposes and add value by drying the grapes. Thus, the price of raisin grapes was important to a grower. However, explaining how the price was determined was difficult for many reasons.

History of Sun-Maid Growers

A group of San Joaquin Valley raisin growers formed a grower-owned cooperative which was called The California Associated Raisin Company in 1912. In 1915, advertising executive E.A. Berg originated the name "Sun-Maid" which was adopted by the cooperative as its name in 1922. Miss Lorraine Collett posed for a painting which would become the company's new trademark and one of America's most recognized product symbols (Figure 1). Sun-Maid Growers of California is now the world's largest producer and processor of raisins and other dried fruits. It has a membership of about 1,200 members which represents approximately 30 percent of California's raisin growers. Sun-Maid owns a plant in Kingsburg, California, which is outside Fresno. Figure 2 provides examples of Sun-Maid's products.

Sun-Maid was governed by a 15 person board of directors who were elected to three year terms with one director elected annually from each of the five districts. It owned $153 million of assets in 2005 including $87 million in inventory and had sales of $254 million and net proceeds of $25 million. Inventory was the primary asset that varied from year-to-year.

Overview of Raisin Production

Raisins are made by drying grapes and are a perennial crop. In the U.S., raisins are produced primarily within the California Central Valley around Fresno. In the past five years, California's raisin grape production has averaged 622 million pounds which represents about 45 percent of the world's supply. The U.S. is the world's third largest exporter of raisins after Turkey and Iran. Wine production is the largest user of grapes followed by raisin production and table grapes. It was thought that almost one-third of the U.S. production of grapes is used for raisins which are an excellent source of natural sugars and other nutrients. Almost three-fourths of the U.S. raisin crop is consumed at breakfast. Up to about 1975, almost 50 percent of the raisins were sold

directly to consumers. Now almost two-thirds are sold in bulk which meant that they are used as ingredients in other products.

Production and Harvesting

Raisins have been historically viewed as a labor intensive crop. The majority of grapes used for raisins are grown using the traditional dried-on-the-ground or sun-drying system. In late August through mid-September, the sugar content in grapes reaches its peak. The grapes are hand picked and put on 24 by 36 inch paper trays between the rows of grapes and left to dry in the sun for about two weeks. There are about 1,000 trays per acre of grapes.

Once the moisture content is below 15 percent, the paper trays are rolled up and the grapes are left to bake for several days. They are then dumped from the roll into a bin, shaken to remove sand and any foreign material and then repacked in wooden bins for storage. This type of harvesting technique is labor intensive over the three week harvest period and during this period the grapes are most susceptible to disease, mold, or other problems due to heavy rains or weather issues. A typical crop yields about 2.2 tons of raisins per acre of grapes. Weather is very critical during harvest and because the growers are located in the same geographical region, an early frost (such as occurred in 1972) or excessive rains can cause major problems for many growers (Lave).

In recent years there has been a movement to mechanization using a dried-on-the vine and continuous tray production system. In 2001, less than one percent of the raisin grapes were grown under these systems. By 2004, this number was almost 20 percent. The newer varieties of grapes mature in late July and early August. The fruiting canes are severed and the grapes remain on the vines until they are dried into raisins.

After six to eight weeks they are harvested by a mechanical harvester. Continuous tray mechanical harvesting involves cutting fruiting canes prior to harvesting to allow the capstem to dry. Grapes are then harvested by a mechanical harvester onto a continuous roll of paper that extends the length of the row. The raisins dry in about 10 days and are then picked up by machine and placed in bins for storage and delivery. Mechanization involves picking the grapes with a modified wine grape harvester and placing into bins. Sun-Maid growers have a larger percentage of its members using mechanical harvesting methods with about 40 percent of its crop harvested this way in 2005. This alleviates much of the hand labor that has been needed under the traditional system. The new dried-on-the-vine system has much lower costs of production and greater production (4 to 5 tons of raisins per acre of grapes) than the traditional system. Table 1 shows costs of production for various enterprises using University of California Cooperative Extension Service budgets.

Raisins have traditionally been made from Thompson seedless grapes. Varieties are classified into table-type (e.g., fresh), raisin-type, and wine-type grapes. Thompson seedless grapes were first introduced in 1872 and are a green, seedless fruit. These grapes are also used for fresh consumption and juice concentrate (e.g., fruit juices) which makes them very versatile. Thompson seedless grapes turn a dark brown color during the drying process and represent over 90 percent of U.S. raisin grape production. Golden seedless raisins are Thompson seedless grapes that are mechanically dried to a golden color and represent about five percent of raisin production. The remaining raisins are Zante currants (very small raisins with a tart flavor), Muscat raisins (large and fruity raisins used during holiday baking), Sultanas (dried yellow-green grapes found in many health food stores), and flame seedless (large red raisins used in baking).

Overview of Raisin Marketing

There are approximately 4,000 raisin growers in the United States and a typical grower has 50 acres of grapes. The majority of growers are classified as family farms and many rely on off-the-farm income or other crops to supplement their income from raisin production. Growers sell their raisins to a packer (e.g., processes and packages the raisins) or handler (e.g., processes, packages, and ships the raisins). The marketing function of processing involves sorting the raisins by size for grading purposes, washing, and discarding any foreign material. The raisins are then weighed, packaged, and distributed to the final user. There are 20 raisin packers in California (3 cooperatives and 17 privately held operations). Many of the privately held companies had their roots in Armenian immigrants. All of the packers were located in the Fresno region. Sun-Maid is the largest cooperative.

Raisins are a value added crop in that growers incur the costs and risks of harvesting and expect a greater margin than in wine or table grape production. However, during the 1997 to 2000 time period, grapes for wine purposes had greater value. Figure 3 shows the prices for fresh grapes used for table, wine, and raisin purposes. Note that the price for grapes used for raisin purposes declined considerably over the 1999 to 2004 time period. Fluctuations in the fresh grape, concentrate, and wine markets causes a great amount of variability in the raisin industry each year.

Federal Marketing Order

California raisins are regulated by a marketing order established in 1949. Marketing orders are used to provide orderly marketing for various U.S. agricultural commodities. The Raisin Administrative Committee (RAC) administers the marketing order for raisins and is composed of 35 growers, 10 handlers, 1 cooperative bargaining association member, and 1 public member.

The RAC collects information on the volume of raisins produced, imports and exports, and inventories of raisins. This information is used to determine whether volume control measures are needed during a marketing year. If volume regulation measures are needed, then the RAC determines how much of the raisin crop should be sold in the open market (free tonnage) with the remainder kept in a reserve pool (reserve tonnage) or marketed to noncompetitive outlets such as government purchases for international food aid or school lunch programs.

Growers are paid the weighted average of the free tonnage price (field price) and the reserve price. This is called the grower price. The free tonnage price is paid directly to the grower at harvest and the reserve tonnage is paid after the reserve crop has been sold which occurs typically up to 15 months after harvest. In 1966, the Raisin Bargaining Association (RBA) was formed to negotiate an annual field price for member's raisins. About 40 percent of the volume produced in California is represented by the RBA. The RBA negotiates with handlers and packers. Figure 4 shows the grower price over time.

Key Issues in 2006

The dried fruit, and in particular the raisin industry in the U.S. has several issues that it was facing including over supply of raisins over the past six years, uncertainty in consumption and demand, changes in technology, challenges to the federal marketing order, and retail grocery consolidation. All of these impacted price discovery.

Oversupply of Raisins

The advances in harvesting techniques have resulted in increased raisin supply in recent years. In addition, imports have grown considerably and exports have decreased slightly (Figure 5). Finally, production of wine grapes has increased and some of these have entered the juice

concentrate market. This has put downward pressure on prices which declined to $491 in 2002 from their high of $1,290 in 1999 and recovered to $1,210 in 2004. The recovery in prices was due to a Raisin Diversion Program which paid growers to destroy grape vines. Lower imports due to heavy rains in Turkey in 2004 have also helped strengthen prices. During this time period, inventories also grew such that the free tonnage declined to 53 percent in 2001. By 2006, this had increased to 82.5 percent due to the lower production and reduction in inventories caused by the diversion program.

Marketing Order Support

Federal Marketing orders require two-thirds grower support for their continuance. As U.S. agricultural policy is moving to a "free-market" approach, growers may in the future vote to return to a free market system which existed prior to 1949.

Mechanization and Dried on the Vine Production

The significant increases in productivity and reductions in labor costs from mechanization and dried-on-the-vine grape varieties have major consequences for the California raisin industry. Many smaller growers are not willing to make the investment in a $150,000 harvester and the reinvestment in grape varieties (planting new vines, trellising, and subsurface drip irrigation). The number of acres planted to raisins has declined to 200,000 in 2006, down from 250,000 in 2004 due to the diversion program. The number of growers has also declined and many of these are family farms.

The availability of labor was a huge issue for growers. Immigration reform efforts were going to put new challenges on growers to find labor that would work for the several weeks of harvest. This labor required lots of hand labor and laborers were required to be registered with

the U.S. Office of Social Security which meant that they had to satisfy legal requirements for work. Many growers believed that it was going to be harder in the future to find labor for the traditional harvesting technologies.

Domestic and International Market Issues

Exports and imports have accounted for 36.65 and 5.67 percent of total domestic production over the 1999 to 2005 time period. However, other countries such as Turkey, Iran, Greece, and Chile, can produce raisins at similar or lower costs relative to the United States. This has put pressure on U.S. exports which have not kept pace with the increases in domestic production over the past ten years. Prices in the export markets are generally lower because they are more price elastic as opposed to higher prices in the U.S. where domestic prices are more inelastic due to product differentiation.

U.S. Department of Agriculture (USDA) reported that per capita consumption of dried fruits has declined from a high of 2.09 pounds in 1988 to a 25-year low of 1.46 pounds in 2004 (Figure 6). However, demand has likely increased due to greater volumes of raisins being consumed in the United States. Ingredient consumption was difficult to measure and it was believed that the per capita consumption data did not reflect the increase use of dried fruits for ingredient uses.

Sun-Maid updated its Sun-Maid girl in 2006 and reinforced this with a $7 million advertising campaign but keeping a trademark contemporary is not easy. For example, General Mills' trademark, Betty Crocker, has been substituted for a red spoon on many Betty Crocker products because women's roles, hair, and dress styles change so frequently. In addition, packaging is more complex with nutrition information and other labeling which makes it harder

to highlight a trademark. The new USDA food pyramid had a picture of a red box of raisins in it which highlighted the importance of dried fruit.

Retail Consolidation

In recent years, there has been tremendous consolidation among retail supermarket stores. Wal-Mart Stores (26.7 percent), The Kroger Co. (9.8), Albertson's, Inc. (7.1), Safeway (6.6), and Costco Warehouse Group (5.5) had 55.7 percent market share in the retail grocery industry in 2005 (Business Guides Inc.). Wal-Mart had a 35.1 percent increase in sales over 2004 while Costco Warehouse Group had a 12.3 percent increase sales. The other three had smaller increases in sales between the two firms. In June 2006, SuperValu, Inc. (1.8 percent market share) and Albertson's approved a merger. This consolidation was remarkable since Wal-Mart was essentially not in the retail grocery industry 15 years ago. This meant fewer customers for Sun-Maid's products and increased emphasis on being relevant in retailer's minds. Sun-Maid had an extensive brand licensing program which was successful in using red packaging and the trademarked Sun-Maid logo. Sun-Maid sold products in over 60 countries in 2005.

The Price of Raisin Grapes

A grower made a decision in late July or early August of each year for the deposition of their grapes. Grapes could be used for wine concentrate, table purposes, or dried for use as raisins. If a Sun-Maid grower decided to harvest grapes for raisin purposes, he or she was obligated to sell all of their raisins to Sun-Maid. Dried fruit was easily storable for long periods of time and could be stored in piles with little storage costs. Because of the federal marketing order, there was a short-term price expectation that reflected the harvest price and a long-term price expectation that reflected the inventory and other issues related to demand.

Thompson seedless grapes dominated the grape varieties and because they were so versatile, the price for raisin grapes at harvest reflected their alternative uses. Thus, the price of wine grapes impacted the price of raisin grapes because growers expected that a high price for wine grapes meant a high price for raisin grapes. Grapes were all grown in the same geographic region and so the impact of weather at harvest could impact many growers equally.

There was some contracting in the wine grape industry but little in the raisin grape industry. The amount of grapes available for raisin crushing purposes reflected the amount of table and wine grapes that were crushed. Generally, almost 99 percent of all wine grapes were crushed and over 80 percent of table grapes were used for fresh purposes. The percentage of raisin grapes that were crushed had ranged from 18 percent (2000/01 marketing year) to 36 percent (2004/05 marketing year). Because dried raisins represented the residual, the percentage of raisin grapes used for raisin purposes ranged from 73 percent to 52 percent in these two time periods. Producers had alternative options for their land whose value ranged considerably in recent years (Figure 8).

Summary

Barry knew that the price of raisin grapes at harvest was not an easy thing to predict. One way was to think through how the price would be determined in an open market without the presence of a federal marketing order. Knowledge of raisin inventories (e.g., reserve tonnage inventories), number and variability in grape bearing acres, percentage of raisin grapes crushed and previous prices was important information. The time horizon was also important. The short-term harvest price included information from the use of grapes for other purposes such as wine. For example, a high price for wine grapes and low inventories meant that Sun-Maid needed to set a price high enough such that growers would incur the costs of harvest and market their raisin grapes as

raisins. Alternatively, a lower price for wine grapes meant that more raisin grapes would be dried as raisins and increases the supply of raisins.

Economists had tried numerous times to formulate an econometric model to forecast prices with little success (e.g., all of the forecasts had a large standard error). Nonetheless, as President of Sun-Maid, Barry knew that his grower-members looked to him for advice as they thought through their management decisions for the use of their vineyard. He needed to explain to them how price discovery occurred in this industry so they could make decisions about the future of their industry.

Figure 1. The Sun-Maid girl in 1923, 1970, and 2006

Figure 2. Examples of Sun-Maid's product line and brand licensed product line

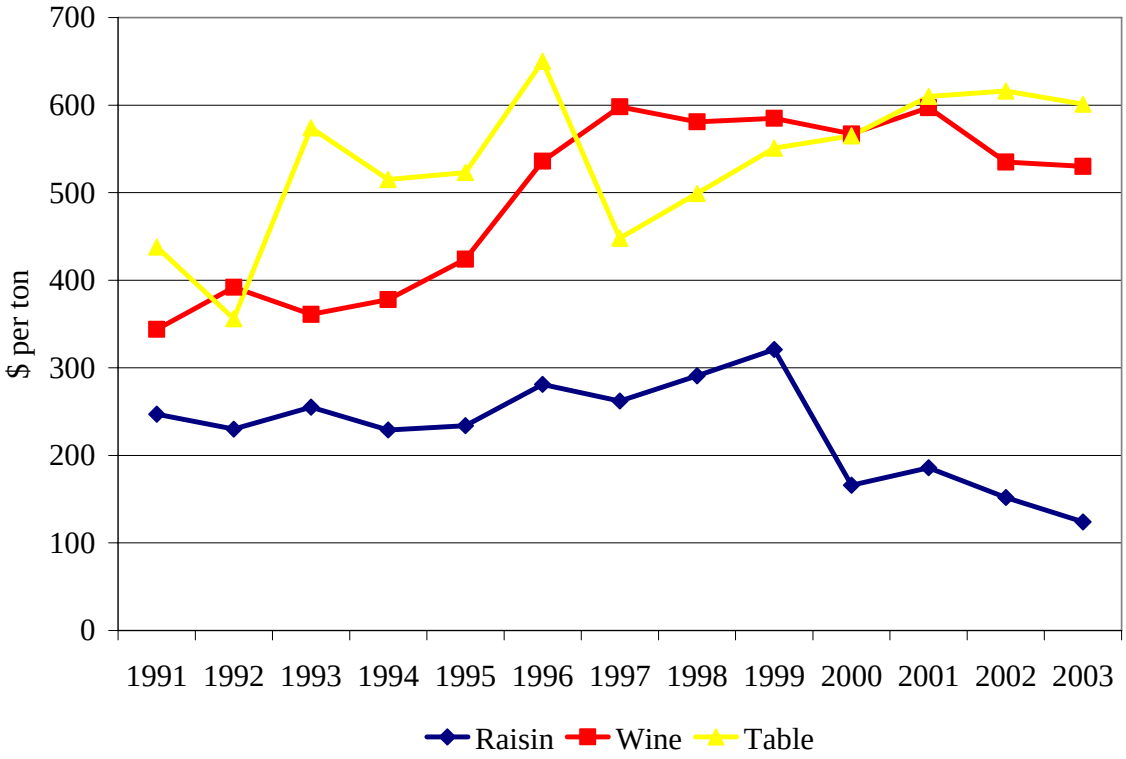

Figure 3. Prices for fresh grapes used as raisins, wine, and tables purposes, 1991 to 2003

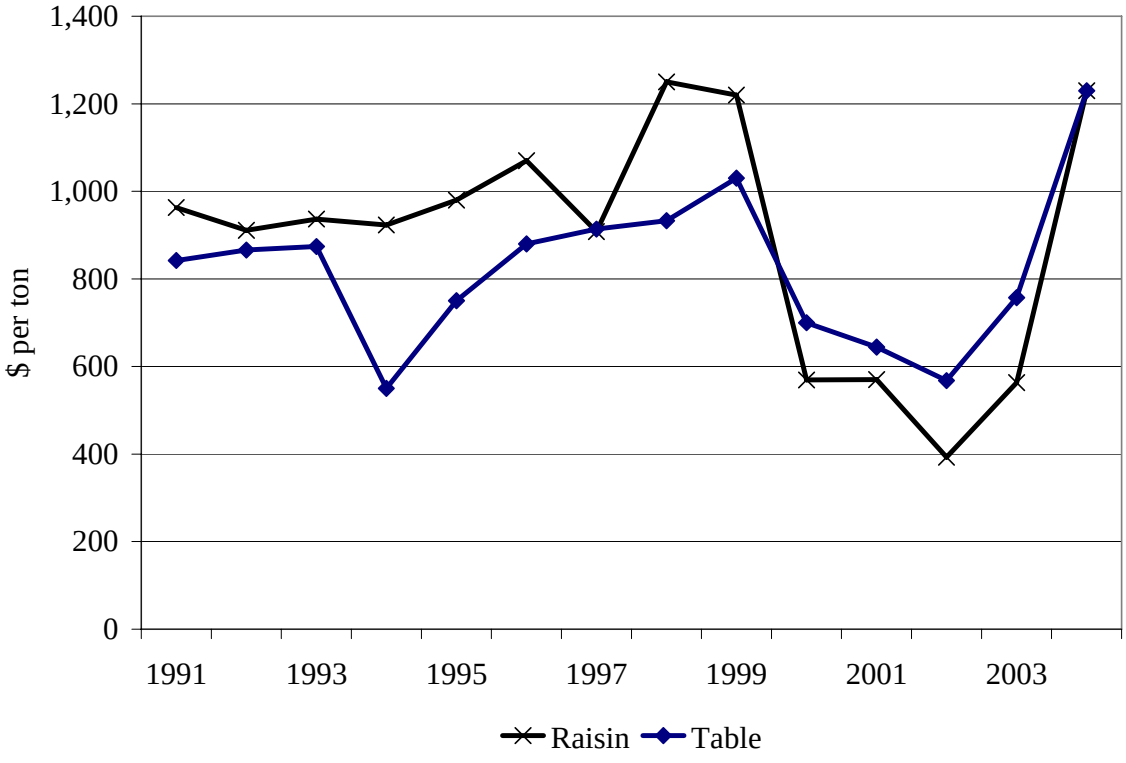

Figure 4. Grower prices of raisin- and table-grapes, 1991 to 2004

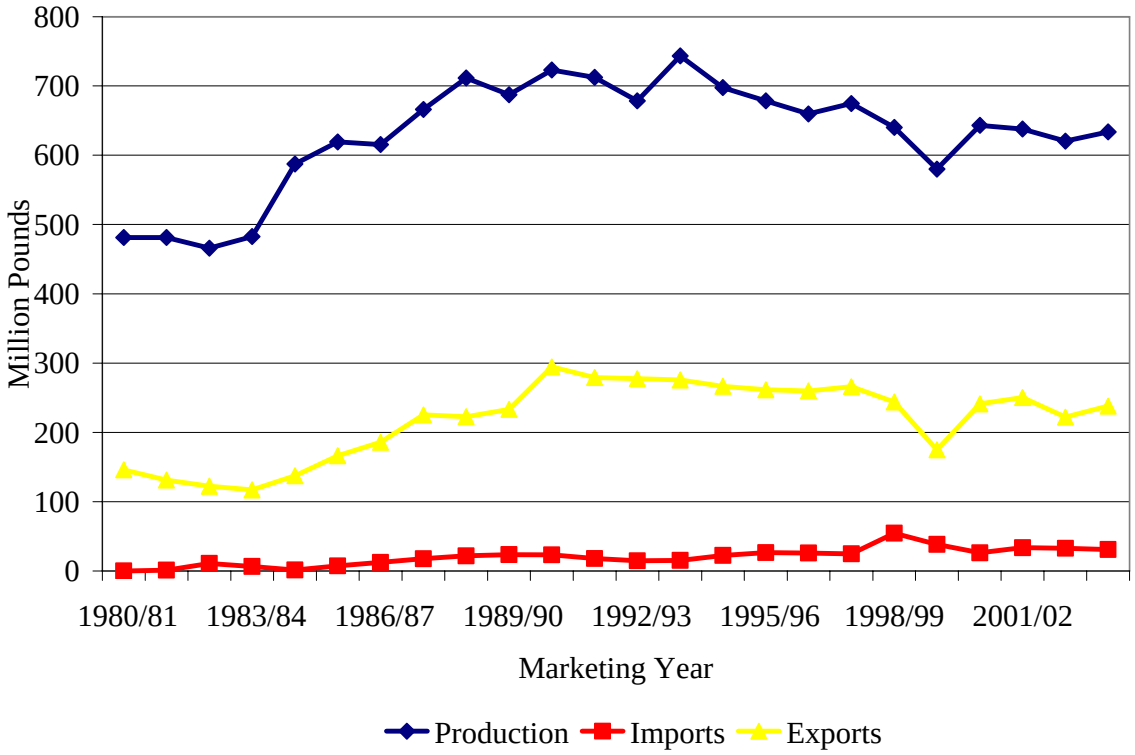

Figure 5. Production, imports, and exports of raisins in the United States, 1980/91 to 2004/05

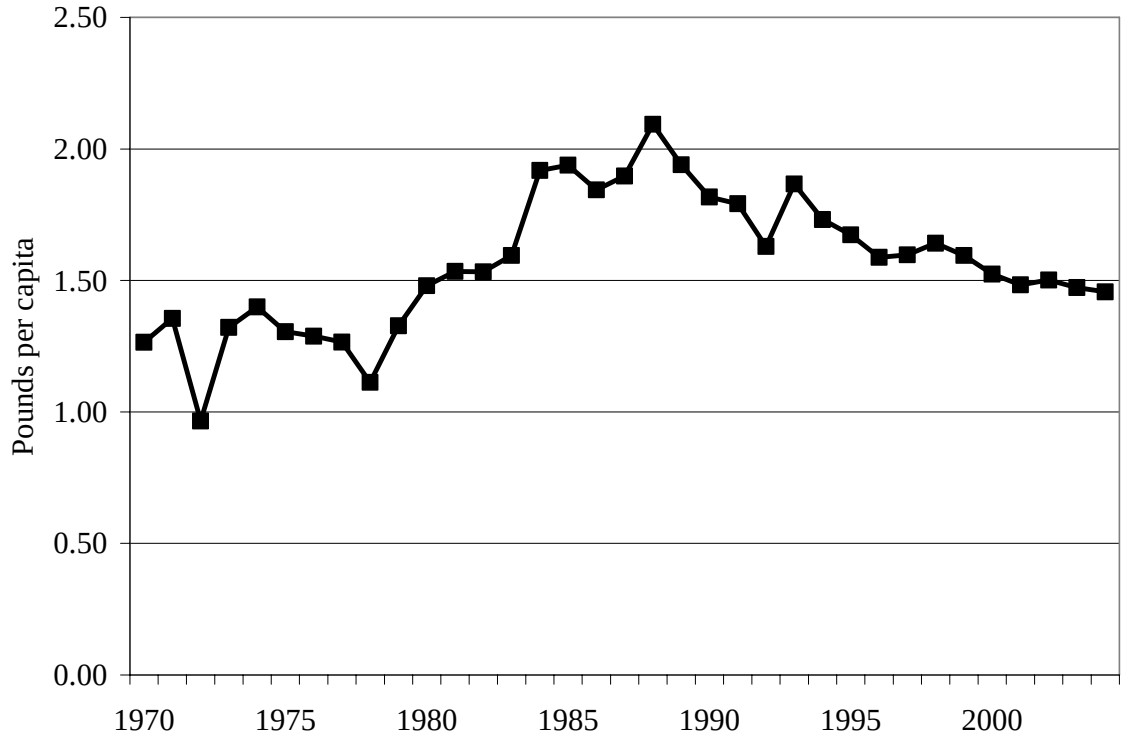

Figure 6. Per capita consumption of raisins in the United States, 1970 to 2005.

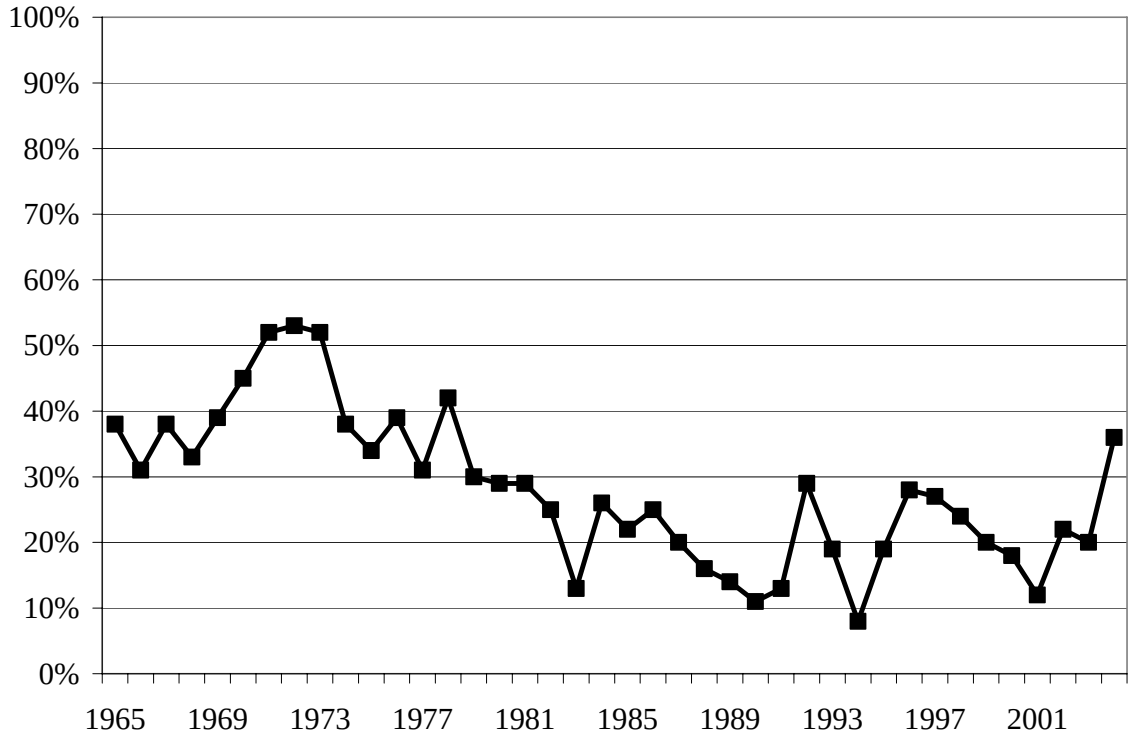

Figure 7. Percentage of raisin grapes used in crushing over time

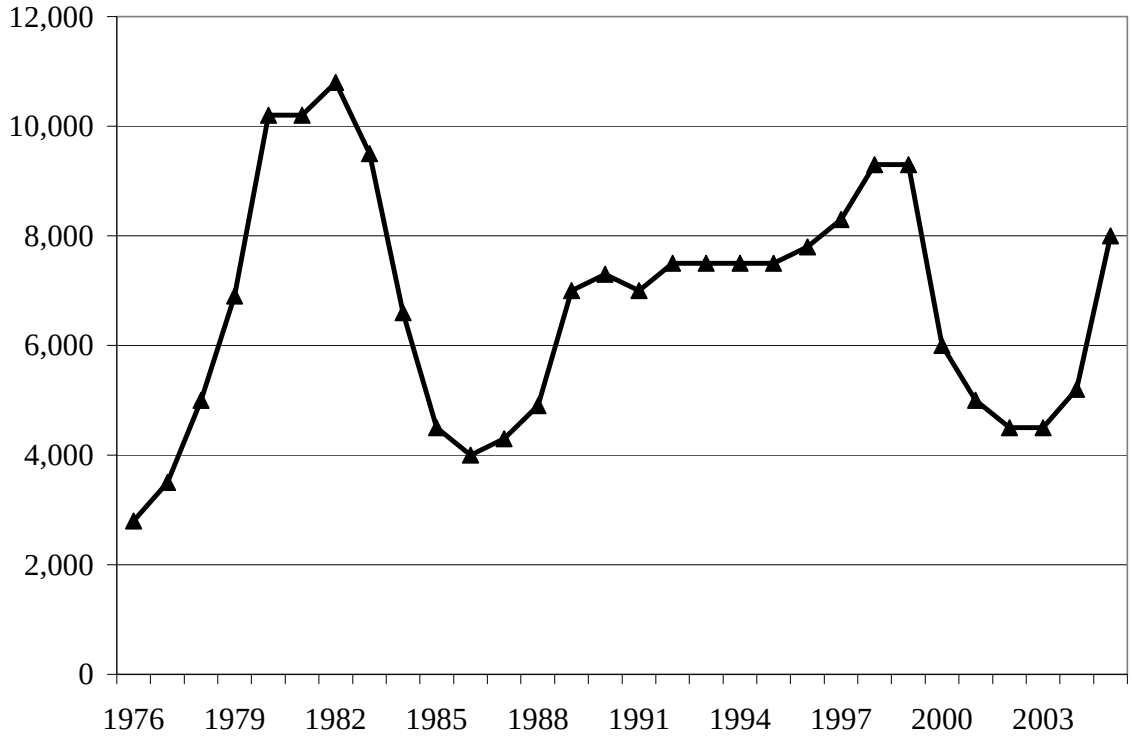

Figure 8. Per acre agricultural land costs in the Fresno, California area, 1976 to 2005

Table 1. Range of harvesting costs for various types of grapes by production system and type (Peacock et al. 2005, 2006; Vasquez et al., 2006)

Harvest System / Trellis System	Yield / Acre (tons)	Harvest Costs ($ / acre)
Dried-on-the vine / south side[a]	2.00 – 3.00	$300 - $460
Dried-on-the vine / overhead[a]	5.00 – 6.00	$300 - $400
Conventional[b]	1.50 – 3.00	$464 – $852
Continuous tray[c]	2.00 – 3.50	$350 - $500
Wine[d]	8.00 – 14.00	$305 - $365
Table[d]	3.80 – 9.50	$1,642 - $4,106

[a]These refer to different types of trellis systems which require the capstems to be shattered and the grapes dried-on-the vine and mechanically harvested.
[b]Conventional is the traditional harvesting system with manual labor harvesting the grapes onto sheets for drying.
[c]Continuous tray is the harvesting system whereby the grapes are harvested mechanically and placed onto long sheets the length of each row for drying.
[d]Wine and table grape production assumes tons of green grapes.

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Table A. Data for figure 3 on prices for fresh grapes

Year	Raisin	Wine	Table
1991	247	344	438
1992	230	392	356
1993	255	361	574
1994	229	378	515
1995	234	424	523
1996	281	536	650
1997	262	598	448
1998	291	581	499
1999	321	585	551
2000	166	567	565
2001	186	597	610
2002	152	535	616
2003	124	530	601

Table B. Data for figure 4 on grower prices for raisin- and table-grapes.

Year	Raisin	Table
1991	963	842
1992	911	866
1993	937	874
1994	923	550
1995	980	750
1996	1070	880
1997	908	914
1998	1250	933
1999	1220	1030
2000	569	700
2001	570	644
2002	393	568
2003	563	757

Table C. Figure 5 data on production, imports, and exports and figure 6 data on per capita consumption

Table F-30--Raisins: Supply and utilization, 1980/81 to date

Season 1/	Supply		Utilization	
	Production	Imports	Exports	Per capita
1980/81	481.1	0.0	146.0	1.46
1981/82	481.4	1.1	131.1	1.52
1982/83	465.9	10.8	122.3	1.52
1983/84	482.9	6.5	117.2	1.58
1984/85	587.3	1.5	137.3	1.90
1985/86	619.2	7.5	166.3	1.92
1986/87	615.3	12.3	185.6	1.83
1987/88	666.3	17.8	225.3	1.88
1988/89	711.5	21.8	222.6	2.07
1989/90	687.2	23.7	233.2	1.92
1990/91	723.0	23.4	294.5	1.80
1991/92	712.5	18.1	279.3	1.77
1992/93	678.5	14.8	277.5	1.61
1993/94	743.4	15.3	275.8	1.85
1994/95	697.7	22.4	266.5	1.71
1995/96	678.6	26.5	261.5	1.66
1996/97	659.6	26.0	259.7	1.57
1997/98	674.7	24.7	265.9	1.58
1998/99	640.3	54.6	244.0	1.62
1999/2000	579.9	38.2	175.0	1.58
2000/01	643.2	26.2	241.2	1.51
2001/02	637.7	33.7	250.3	1.47
2002/03	620.3	32.7	222.2	1.49
2004/05	633.7	30.9	237.9	1.46
2004/05 4/	630.6	32.4	236.8	1.44

1/ Season begins in August of the first year shown. 2/ Shipments from Raisin Administrative Committee. 3/ Exports from the U.S. Department of

Commerce, Canadian import data 1978-89. 4/ Preliminary.

Source: Economic Research Service, USDA.

Table D. Figure 7 data on crushing percentage

Year	Percentage
1965	38%
1966	31%
1967	38%
1968	33%
1969	39%
1970	45%
1971	52%
1972	53%
1973	52%
1974	38%
1975	34%
1976	39%
1977	31%
1978	42%
1979	30%
1980	29%
1981	29%
1982	25%
1983	13%
1984	26%
1985	22%
1986	25%
1987	20%
1988	16%
1989	14%
1990	11%
1991	13%
1992	29%
1993	19%
1994	8%
1995	19%
1996	28%
1997	27%
1998	24%
1999	20%
2000	18%
2001	12%
2002	22%
2003	20%
2004	36%