Giannini Foundation of Agricultural Economics
Research Report Series
(University of California, Office of the President)

Year 2004 *Paper RR*346

Marketing Order Impact on the Organic Sector: Almonds, Kiwifruit and Winter Pears

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Giannini Foundation Research Report 346

January 2004

University of California
Agriculture and Natural Resources
CALIFORNIA AGRICULTURE EXPERIMENT STATION

ACKNOWLEDGMENTS

The authors wish to thank the following people for their contributions to this report: Lindy LaFrancis, manager of the Kiwifruit Administrative Committee and president of the California Kiwifruit Commission; Thomas Krugman, senior director, Policy and Administration, Almond Board of California; Kevin Moffit, president, and Lisa Bailey, Pear Bureau Northwest; David Granatstein, area extension agent, Center for Sustaining Agriculture and Natural Resources, Wenatchee, Washington; Ray Green, supervisor, Organic Program, California Department of Food and Agriculture; George Ing, chairman, research subcommittee, Winter Pear Control Committee, and a pear grower in Hood River; and especially all the organic handlers who participated in our study.

The Agricultural Marketing Service (U.S. Department of Agriculture) provided the funding for this project. We appreciate the efforts of Jay Gerber, assistant to the chief of the Marketing Order Administrative Branch of the Agricultural Marketing Service, in assisting us in carrying out this research.

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SUMMARY

Organic production of fruits, vegetables, and specialty crops, while small in total volume, has been increasing over time and is expected to continue to grow. Many of these crops are covered by federal marketing order programs with provisions and regulations that affect marketing of the total crop, both conventional and organic. Marketing orders, which are financed by mandatory assessments on all shipments of the covered commodity, can include provisions that (1) regulate the volume marketed; (2) establish mandatory minimum quality, container, and pack standards; (3) finance generic advertising and promotion programs; and (4) sponsor production and marketing research. Most marketing order administrative committees also collect and disseminate economic statistics to help achieve the Agricultural Marketing Agreement Act objective of orderly marketing.

Marketing orders and other government-mandated marketing programs, including national check-offs and California commodity commissions, have been and continue to be challenged in court. Two legal cases regarding First Amendment issues associated with mandatory payments to support generic commodity advertising have progressed to the U.S. Supreme Court and others are wending their way through the courts.[1] Mandatory support of generic advertising is the provision most often challenged, but individuals also question the benefits of minimum quality standards and commodity research programs. There are handlers, with operations ranging from small to very large, who believe that they spend more on mandatory commodity assessments than they receive in benefits. Among these are producers of organic commodities under active marketing orders who have requested exemption from mandatory assessments and marketing order provisions.

Research on generic commodity advertising generally shows that such advertising does yield positive returns. Alston et al. (1996), for example, estimated that promotional activities by the California Table Grape Commission increased U.S. per capita consumption by about 1.5 pounds. Using conservative assumptions regarding the effects of supply response to higher demand, they estimated a marginal benefit-cost ratio of about five to one (a $5 return on every $1 spent). Studies of estimated returns from advertising and promotion programs for other California commodities have examined avocados (Carman and Craft), prunes (Alston, Carman, Chalfant, Crespi, Sexton and Venner), almonds (Crespi and Sexton), eggs (Schmit, Reberte and Kaiser), raisin exports (Kaiser and Liu), and walnuts (Kaiser). Each of these studies found that advertising and promotion of a product increased demand and that program returns exceeded costs by a significant margin.

Marketing order provisions raise issues related to how the costs of benefits are distributed and whether the rules and regulations are equitably applied. For example, the impacts of a minimum-size regulation can vary regionally because of different climate conditions and production practices. Similarly, research projects that are funded by a marketing order may benefit some producers more than others because of the different varieties growers produce and their individual production practices. If there are differences in subsets of a commodity based on different varieties

[1] The effects of legal challenges to mandatory producer and handler support of commodity advertising programs are difficult to forecast. Two recent U.S. Supreme Court decisions have not settled the First Amendment issues (compelled speech vs. free speech) being raised in the litigation. In the first case, *Wileman Bros. & Elliot, Inc. v. Espy*, which involved mandatory assessments for promotion of California nectarines, plums, and peaches, the court decided that the plaintiffs were obliged to participate in the generic promotion program because they had voluntarily participated in the regulated market. However, United Foods successfully challenged the 1990 Mushroom Act (*United Foods, Inc. v. United States*) on compelled commercial speech grounds. The U.S. Supreme Court upheld the Sixth Circuit Court's decision that the generic advertising program for mushrooms was unconstitutional. Other cases that are being appealed to circuit courts may make it to the Supreme Court. If the Supreme Court finds that producers and handlers cannot be compelled to support an industry advertising program, then many, if not all, such mandatory programs will likely fail due to free-rider problems. If the court decides in favor of mandatory support, current programs will continue and new programs may emerge. Crespi and Sexton (2001) and Crespi and Marette (2002) discuss some of the implications of court decisions on commodity advertising programs.

or product differentiation through branding or other means, for example, advertising and promotion can increase demand for one variety or product more than another.

Note that problems with equitable application of each of the provisions discussed above also can occur when comparing organic and conventional products.[2]

As the organic industry continues to grow and interest new customers, concerns about how conventional and organic producers can cooperate and co-exist under marketing order programs must be addressed. Fundamental issues concerning relevant markets remain:

- Are organic and conventional products that are in the same commodity category close substitutes for each other in consumer markets with similar characteristics of demand?
- Do an organic producer's views about grades and quality depend on the volume s/he markets?
- Does a minimum quality standard impact organic and conventional producers differently because of product characteristics that are tied to the method of production?
- Does a surplus in the market for a particular commodity affect the price for organic and conventionally produced commodities similarly?
- How can promotion, advertising, and production research be structured so that both conventional and organic producers realize similar benefits?

The goal of this study was to evaluate the strengths and weaknesses of federal marketing order programs from the point of view of organic producers and handlers. Because of the relative "newness" and small volume of organic production for most commodities, a limited amount of data is available to answer these questions. This study collects and assembles the information that is available and, in the process, identifies deficiencies in the data.

Commodities

Federal marketing order programs for three commodities—California almonds, California kiwifruit, and Washington-Oregon winter pears—were selected for analysis. In all three cases:

- organic production of the commodity is well-established and regulated by a marketing order.
- the administrative committee for each order has established working relationships with organic producers and handlers.
- there is disagreement among organic producers and handlers about the costs and benefits of the marketing order program.
- the marketing order administrator and administrative committee are often required to respond to issues associated with marketing organic products.

Table S.1. Active Provisions of the Case Study Federal Marketing Orders

Commodity	Grade	Size	Pack and Container	Supply Control	Advertising	Research
California Almonds	X	X		X	X	X
California Kiwifruit	X	X	X			
Washington-Oregon Winter Pears					X	X

[2] Work on the distribution issues associated with marketing orders indicates that product differences can affect returns from advertising and promotion programs. Research papers on some of these issues were presented at the NEC-63 conference on commodity promotion (Washington, DC, October 2002). See papers by Alston, Freebairn and James ("Distributional Issues in Check-Off Funded Programs"), Chung and Kaiser ("Distributional Effects of Commodity Promotion Programs by Type of Producer"), and Crespi and Marette ("Are Equivalent Assessments for Generic Advertising Optimal if Products are Differentiated?"). The Web site address for executive summaries is *http://commodity.aem.cornell.edu/nec63/exsum_02DC.htm*. Crespi and Marette (2002) also offer a journal article examining generic advertising under product differentiation that is relevant when an organic product is perceived to be of higher quality than its conventional counterpart.

The federal marketing orders for almonds, kiwifruit, and winter pears differ with respect to the provisions that are authorized and utilized (Table S.1). They collectively include all of the kinds of provisions that are commonly part of marketing orders. The almond order has the largest budget and also provides for and employs the most provisions. It includes minimum grade standards, advertising and promotion, and research programs and is the only one of the three that includes supply control (reserves). The kiwifruit order focuses on minimum maturity, grade, and size standards and also contains pack and container regulations. In addition, it established a separate state entity, the California Kiwifruit Commission (CKC), to conduct advertising and promotion. The Oregon-Washington winter pear marketing order has active provisions for advertising and promotion and for research. It also includes a provision for mandatory minimum grades and sizes, but that provision has not been used for several years.

Procedure

A case study was prepared for each of the three commodities. The first step was to identify data sources for each commodity and collect published economic data, including acreage, yields, production, average prices, total revenues, exports, imports, and consumption. Issues that organic producers and handlers have with the marketing orders were identified through meetings with personnel from each of the administrative committee offices. The committees also provided contact information for organic handlers[3] and unpublished industry data for organic and conventional fruits and nuts that was volunteered to them by handlers. Organic handlers of each commodity were contacted to schedule a personal or telephone interview. Participating handlers were asked about the volume they currently market, outlets they utilize, the prices they have received, and their views on growth in the organic market and how marketing order provisions affect their own marketing efforts. The case studies organize and report the production and marketing information assembled for each organic commodity and focus on the marketing order issues that tend to be unique to organic products.

The authors were fortunate to have the cooperation of the United States Department of Agriculture's (USDA's) Agricultural Marketing Service and Economic Research Service and of the Organic Farming Research Foundation. This study would not have been possible without the active participation and cooperation of the marketing order administrative committees and the organic handlers.

Findings

This section of the report compares study results for the three commodities in terms of commodity data and marketing order provisions. It is important to note that for each commodity the views of handlers and producers ranged from strong support to strong opposition and were not necessarily uniform for all the provisions of an order. Readers interested in more detailed information about each commodity are referred to the case studies.

Production of Organic Commodities

A goal of this study was development of estimates of organic acreage and production for each commodity that could offer perspective on the relative importance of organic products for each marketing order. The administrative committees have all gathered recent information on the organic sector of their industries but have little historical data. The California Department of Food and Agriculture (CDFA), which administers the California Organic Foods Act, tracks registered organic almond and kiwifruit acreage, and CKC has collected and published separate data sets on crop size, movement, fruit size, and packaging for organic and conventional kiwifruit beginning with the 2000–01 marketing year. The Pear Bureau Northwest (PBN) collects data on organic pear production and marketing. These sources were combined with information from organic handlers to develop the estimates shown in Table S.2.

[3] Contact information for organic almond handlers and a page containing information for winter pear handlers are available on Web sites maintained by the marketing order administrative committees. See *www.almondboard.com* and *www.usapears.com*.

Table S.2. Estimated Organic Acreage and Production for Almonds, Kiwifruit, and Winter Pears, 2001–02 Marketing Year

Commodity	Growers	Acres	Production	Percent Share of Total Acreage	Percent Share of Total Production
Almonds	81	2,959	3,015,221 lbs	0.56%	0.35%
Kiwifruit	20	297	2,476,642 lbs	6.47%	6.06%
Winter Pears	80	1,000	422,267 boxes[1]	3.80%	2.75%

[1] A standard box of winter pears weighs 44 pounds. Total production was approximately 18,579,784 lbs.

Note in Table S.2 that the organic share of production is smaller than the organic share of acreage for each commodity, indicating that average per-acre yields are less for organic production in all three cases.

The average number of acres per operation is lower for organic almond and winter pear growers than for conventional operations while organic kiwifruit growers' average size operation is slightly larger than the conventional average (Table S.3). Given the estimated number of organic growers (almonds, 81; kiwifruit, 20; winter pears, 80) and estimated acreage, average organic almond and winter pear operations consist of fewer acres than the average operation for the industry as a whole, while the average organic kiwifruit operation has slightly more acres than the industry average. Based on *Almond Almanac* figures, the average California almond grower has 80 acres of almonds while the average organic almond grower has 37 acres. The average California kiwifruit grower has 13 acres while the average organic kiwifruit grower has 15 acres. The average Washington-Oregon pear grower has 17 acres of winter pears while the average organic winter pear grower has 13 acres.

Organic Handlers

Interviews were completed with 12 of the 14 organic almond handlers, eight of the ten organic kiwifruit handlers, and ten of the 15 organic pear handlers. Table S.4 summarizes some interesting characteristics of the handlers interviewed—how long they have been handling organic products, how and why they got started in organics, and the size of their operations.

There are approximately 110 almond handlers in California, of which 14 (12.7 percent) handle organic almonds; seven of the 14 handle only organic almonds. For kiwifruit, there are approximately 54 handlers in the state, ten of which (18.5 percent) handle organic kiwifruit. Seven of those ten handle organic kiwifruit only. For Washington-Oregon winter pears, there are approximately 70 handlers, 15 of which (21.4 percent) handle organic pears. At least six of those handle only organic pears.

A comparison of the percentage of organic handlers for each crop with organics' share of production (Table S.2) indicates the relatively small size of organic packouts (e.g., for almonds, 12.7 percent of almond handlers account for only 0.35 percent of total output).

The degree of handler specialization varies by commodity. Seven of the 12 organic almond handlers deal only in almonds, but all of the organic kiwifruit handlers pack other organic commodities and nine of the ten organic pear handlers pack other organic products. Organic almond handlers typically handle other organic nuts, while organic kiwifruit handlers tend to include other organic fruit crops (plums, pears, apples, and apricots). Organic winter pear handlers tend to handle organic Bartlett pears and organic apples.

Table S.3. Relative Size of Organic versus Conventional Operations

	Conventional Acres	Organic Acres
CA Almonds	80	37
CA Kiwifruit	13	15
WA-OR Winter Pears	17	13

When asked why they decided to start packing and marketing organic products, handlers' responses varied, but "health and environmental concerns" and "economic reasons" were mentioned most often. Handlers who have been involved with organic commodities for the longest period of time tended to have started as producers and integrated packing into their operations when existing packers were not interested in handling organic products. Their interest in organic production was typically based on environmental and health concerns. Some of these handlers also mentioned economic reasons—higher prices and lower production costs for organic products. Many of the newer handlers gave economic reasons such as "existing producers shifted to organic production," "organic prices are higher," and "better margins for organic products." While the years that the handlers have been involved with organic products varies widely, overall the typical organic handler has a relatively new operation. Note that the average number of years for which handlers have been packing organic products is very similar for the three commodities (Table S.4). This is probably due to the relatively recent rise of organic commodities to commercial importance.

Marketing Issues

The three organic commodities share some interesting characteristics related to marketing, including channels of distribution, prices and pricing, and individual handler advertising and promotion efforts. These similarities are undoubtedly related to their volume of sales, product category, and customer base. Production of each of the three organic crops is small compared to total production, the handler operations tend to be small, and the organic segment is a limited portion of the total market that is typically reached through specialized vendors. Overall, organic handlers for each commodity use the same channels of distribution as do conventional handlers, but there are more intermediaries involved in organic channels and they market to a different mix of outlets. A large share of conventional produce sales are made directly to large chain-store retailers. If an organic handler sells directly to a retailer, it is likely to be a specialized supermarket chain that emphasizes organic produce, such as Whole Foods or Wild Oats, although some large handlers have sold product directly to Safeway (which apparently has buyers who specialize in organic fruits and vegetables). Organic handlers tend to sell through wholesalers, organic distributors, and brokers to reach smaller organic food stores, food cooperatives, and supermarkets that have organic food sections. Several organic handlers also sell a significant amount of their product directly through the Internet and farmers markets.

Export sales of organic produce were reported for each of the commodities, but the volumes are small (in both quantity and percentage) compared to exports of conventional product for the same commodity. Specifically, the California almond industry supplies the world—more than 70 percent of the 2000–01 crop went to export markets. However, only seven of the 12 organic almond handlers had export sales and, based on their responses, exports made up only about 25 percent of their total organic sales. Exports of California kiwifruit, which were once quite important, now account for only approximately 20 percent of annual production. About two-thirds of annual U.S. kiwifruit consumption is from imports. Only two handlers reported

Table S.4. Respondent Handler Characteristics

	Almonds	Kiwifruit	Winter Pears
No. of Handlers	12	8	10
No. That Handle Other Crops	7 of 12	8 of 8	9 of 10
Reason for Organic Operation			
Health/environment	7	2	4
Economics	9	4	5
Years in Organic Packing			
Range	1–24	1–17	1–19
Average	10.1	9.7	9.0

organic kiwifruit exports during the 2000–01 marketing year, and the volumes were less than 10 percent of their packs. U.S. pear exports have increased significantly since the late 1980s; for 2000–01, 32 percent of the total northwest winter pear crop was exported. For 2001–02, approximately 24 percent of the organic winter pear crop was exported, with 13 percent shipped offshore (mainly to the United Kingdom), 6.6 percent sold to Mexico, and 3.8 percent sold to Canada. Six of the ten organic winter pear handlers reported export sales, with exports ranging from 5 to 40 percent of their total packs.

Premium prices for organic products are a major factor in the growth of the organic commodities examined in this study and will be an important determinant of future production trends. There is a limited quantity of detailed cost-of-production data, but it appears that costs per unit of output for organic almonds, kiwifruit, and winter pears are higher than for their conventional counterparts. Though organic production allows for a reduction in purchased inputs, those savings tend to be offset by lower yields and increased labor requirements. Thus, to be profitable, organic products must be sold for premium prices over conventional prices, which they have. Organic almonds have recently been sold for a price two to four times higher than the price for conventional almonds; the premium for organic kiwifruit has recently been 20 to 30 percent; and organic winter pear handlers report prices that are 20 to 25 percent higher than for conventional winter pears. Kiwifruit and winter pear handlers report that their organic fruit has enjoyed much higher premiums in the past but that the differential has narrowed as organic production has increased.

Almost all of the organic almond and kiwifruit handlers and a majority of winter pear packers expect organic production of their crops to expand. While consumption of each of the organic commodities has increased over time despite premium prices, there is widespread concern that future production increases will place additional pressure on the premiums. Several kiwifruit and winter pear handlers reported occasionally or regularly selling organic fruit as conventional fruit at conventional prices when (1) conventional prices were high, (2) the organic market was saturated with product, and (3) the quality of the commodity was too low for the organic market. For both these commodities, smaller and lower grade organic fruit are most likely to be sold as conventional.

All three industries conduct generic advertising and promotion programs. Almonds and winter pears are marketed through producer-funded advertising and promotion provisions in the federal marketing orders while California kiwifruit are marketed by a state commission. In addition, several handlers reported private advertising expenditures, although the amounts were usually small. This private advertising was typically for trade shows, ads about product availability in industry and organic trade publications, Web sites, and directories. At least one organic almond handler, using credit-back provisions in the marketing order (credit toward assessments for advertising expenditures), used print advertising to final consumers and provided point-of-purchase materials to retailers.[4] Overall, seven of the 12 organic almond handlers, four of the eight organic kiwifruit handlers, and two of the ten organic pear handlers did some private advertising.

Slotting fees charged by large food retailers are a controversial development in produce marketing. All of the organic handlers who participated in this study stated that they have not paid slotting fees to secure shelf space for products. One organic winter pear handler reported paying mandatory advertising fees to a retailer to continue as a supplier.

Handler Views on Marketing Order Provisions

An important study objective was to examine the views of organic handlers and producers on the federal marketing orders that regulate their products. Each marketing order consists of a unique combination of provisions and programs that apply to the entire product (organic and conventional) produced and packed in the geographic area covered by the order. The administrative committees for the marketing orders operate several special programs for organic

[4] The almond marketing order is the only one of the three that provides credit toward the marketing order assessment for advertising that meets criteria established by the Almond Board.

production that recognize its unique characteristics. The kiwifruit and winter pear administrative committees, for example, publish separate market statistics for organic production, grades, seasonal movement, packages, and inventory. The committees also prepare directories of producers of organic products that can be accessed by buyers. In addition, the Winter Pear Control Committee (WPCC), which administers the winter pear marketing order, supplies point-of-purchase materials about organic pears to retailers. The committee for the almond order, Almond Board of California (ABC), effectively exempted organic almonds from its most recent reserve programs.

Handlers for each of the three commodities were asked (1) which marketing order programs work and which programs do not work for organic products, and (2) to suggest program improvements. Handler views are summarized for quality standards, research programs, supply controls, and advertising and promotion.

Mandatory Minimum Quality Standards

The almond and kiwifruit marketing orders have mandatory minimum quality standards. Although the winter pear marketing order authorizes grade, size, and quality regulations, these provisions have not been used since the 1978–79 marketing year. The order does require federal inspection of pears before shipping from the handler.

Handlers for all three commodities view the typical organic consumer of their products as having above-average education, income, concern about health, and environmental awareness. The handlers for each commodity commented that their customers are very concerned about quality and that they must supply a quality product regardless of marketing order provisions. One kiwifruit handler described the market evolution for organic kiwifruit as "beginning with customers who were most concerned about farming practices." As consumers became acquainted with organic kiwifruit, they came to appreciate the taste but were not overly concerned with appearance. Now, he said, his customers want fruit that tastes good and is free from blemishes. Another handler markets only his U.S. No. 1 organic kiwifruit as organic; fruit that does not meet the No. 1 grade standard is sold as conventional.

The handlers for organic almonds and kiwifruit were asked whether mandatory minimum quality standards help sell their organic product. Seven of the 12 organic almond handlers responded positively that the standards increase sales. These handlers indicated that the grades are known and respected by buyers worldwide as an indicator of quality. Three of the handlers did not object to the use of mandatory standards but indicated that their buyers demand quality and that the almonds must look good and satisfy existing standards in order to be sold. Two handlers said that minimum quality standards did not help them market organic almonds.

Kiwifruit handlers expressed a variety of opinions on the value of minimum quality standards for organic kiwifruit. Two of the smallest producer/handlers, who market only their own fruit, said that the minimum size requirement tended to result in more culls for organic than for conventional fruit. One, however, added that the economic impact was minimal because organic consumers would not buy the small-cull fruit. Four of the eight handlers were very positive and supportive of existing quality standards, which they said help sell organic kiwifruit by maintaining consistent quality and giving buyers confidence in the product. The same four handlers also believe that current standards are fair. One handler criticized the maturity standard for sugar levels as too low (the average minimum maturity of 6.5 percent soluble solids was reduced to 6.2 percent for the 2000–01 season).

All of the organic winter pear handlers sort their fruit according to USDA standards. Organic pears that do not meet the standards are processed. Handlers were asked if additional standards or mandatory standards would help them market organic pears. Five of the ten organic winter pear handlers did not believe that additional standards are required or would help in marketing. One noted that his customers have their own standards and that mandatory minimum standards would not help. On the other hand, four of the handlers support industry-wide minimum quality standards as assuring that all organic winter pears are "good quality." One of these handlers noted that there are additional production standards for organic pears and

that these stringent standards should be made known to consumers.

Mandatory minimum quality standards, as currently structured and applied to the commodities studied, are not controversial. Overall, there was not a great difference in views between the organic handlers operating under mandatory minimum quality standards (almonds and kiwifruit) and those without such restrictions (winter pears). Many of the handlers believe that the third-party stamp of quality provided by grades and standards is an important marketing tool. Organic customers are generally viewed as significantly concerned about quality, and most of the almond and kiwifruit handlers agreed that they pack a high-quality product without mandatory quality standards. The greater impact that current quality standards may have on organic products generally is not regarded as a serious problem for two reasons. First, quality-conscious organic consumers are probably not interested in products that do not meet the minimum standards. Second, there are premium-price alternative uses for organic almonds and winter pears that do not meet grade standards.

Research

The marketing orders for California almonds and Washington-Oregon winter pears each have active provisions for marketing and production research. ABC runs two major research programs, one on nutrition and the other on production. The nutrition program, to which ABC allocated $1 million for 2001–02, is focused on consumer health concerns that provide a base for domestic marketing programs. ABC also funds production research projects in orchard management, variety development, pests, diseases, irrigation, tree nutrition, and pollination. The proposed research budget for 2002–03 allocates $583,604 to 28 projects. One of those projects emphasizes organics and several of the integrated pest management (IPM) projects have potential applications to organic production. WPCC currently collects an assessment of two cents per standard box of pears for research projects, with total research funds recently averaging about $300,000 annually. While none of WPCC's projects is specifically dedicated to organic winter pears, funded IPM projects have potential benefits for both organic and conventional producers.

The organic almond handlers in the study generally regard ABC's research favorably. They were most positive in their comments on nutrition research on the health benefits of almonds. They believe that this research helps emphasize health benefits that consumers are seeking when they purchase organic almonds. One handler expressed his desire for separate research on the organic industry, even though he realizes that it would be a small share of the total research program.

Six of the ten organic winter pear handlers responded positively to the market and production research funded by WPCC. There were positive comments on post-harvest projects, market research, and production research. Four handlers stated that, though production research is driven by conventional pears, the results benefit both organic and conventional producers. Another commented that IPM research is valuable for organic growers. Two of the handlers were not familiar with any research results that were of use to organic producers. One commented that he pays no attention to anything that WPCC does.

Supply Control

The almond marketing order is the only one of the three that controls the amount of product marketed. Control over supply marketed is achieved through two forms of volume control, allocated and unallocated reserves. Allocated reserves permanently remove almonds from primary consuming markets and divert them to secondary markets such as animal feed. Unallocated reserves temporarily restrict the flow of almonds to the market at specific points in time and then release them later in the marketing year or even in the next marketing year. ABC used unallocated reserves twice during the last decade—1994–95 and 1999–2000—but effectively exempted organic almonds from those programs by including sales of organic almonds to organic outlets as an authorized reserve outlet. As expected, most of the organic handlers said that the reserve program did not create any problems for marketing organic almonds.

Ten of the 12 organic almond handlers offered comments on almond reserves. Of those ten, six were strongly opposed philosophically to reserves for organic or conventional almonds. They "do not believe in reserves" and believe that there should be a "free market." One stated that "handlers should be free to decide when and how much to store for later sale." The other four handlers saw no reason to have reserves for organic almonds given the tight supply situation relative to demand. Three of the four mentioned that reserves could possibly be useful in the future if organic almonds are overproduced relative to their market.

Advertising and Promotion

The majority of assessments under the marketing orders fund generic advertising and promotion programs as opposed to research, grades, and standards. While generic advertising and promotion programs for agricultural commodities have increased demand and generally yielded positive returns on producer-funded expenditures, they continue to be disputed by some. This is especially true among organic handlers and producers, whose market niche does not necessarily benefit from increases in overall demand. The degree of separation (or of market integration) between organic and conventional consumer markets, while very important, has not been quantified. However, most of the organic handlers who offered comments noted that the market for their organic product is distinct from the market for the conventional commodity. They also believe that their organic product is clearly superior to the conventional product in several dimensions. These views undoubtedly influence handler/producer evaluations of the contribution of advertising and promotion programs to sales of organic products.

Seven of the 12 participating almond handlers reported advertising expenditures for their organic almonds in addition to their contributions to ABC, in amounts ranging from $600 to more than $50,000 annually. As expected, views on the contribution of ABC advertising and promotion to organic almond sales were mixed. Three of the five handlers who made no additional advertising and promotion expenditures stated that ABC's program does affect total almond demand but does not help sell organic almonds. The other two stated that the ABC program does not help them sell their organic product. Five of the seven handlers who do some of their own advertising and promotion are supportive of ABC's programs. Three believe that ABC's efforts have an indirect positive effect by increasing the demand for all almonds ("helps sell almonds in general but does not provide direct help to market organic almonds"); the other two indicated that nutritional messages based on the ABC research program help market organic almonds. Handlers from two large organic operations stated that they do not believe that ABC's advertising and promotion program is effective for organic or conventional almonds and would prefer to be exempt from assessments for advertising and promotion.

Two of the ten organic winter pear handlers interviewed reported advertising expenditures separate from assessments paid to WPCC. One of them believes that generic advertising conducted by WPCC helps market organic pears while the other stated that it provides no help. Two other organic handlers also believe that industry advertising has not helped them market organic pears. The remaining six handlers believe that WPCC advertising and promotion benefit all pear growers but they are not enthusiastic about the programs. Two of the handlers believe that sales of organic winter pears would benefit from a complete separation between organic and conventional pear advertising and promotion. They think that organic winter pears should be promoted for their positive effect on the environment, freedom from synthetic pesticides, and other features that differentiate them from conventional winter pears.

The 2002 Farm Bill includes a section that exempts certified organic products from commodity promotion assessments. The bill directs USDA to issue regulations exempting any person who produces and markets solely 100 percent certified organic products. Such producers are to be exempted only from the portion of the assessments used for market promotion. On December 1, 2003, USDA proposed amendments to 28 fruit and vegetable marketing order programs that authorize market promotion activities, including the orders covering Washington-Oregon winter pears and California almonds. The kiwifruit order is not impacted because it does not include promotion. Since organic

winter pear handlers in this study were contacted after passage of the bill, they were asked for their opinion on the number of 100 percent organic producers who will elect not to pay commodity promotion assessments. Half of the ten handlers stated that all of the producers who qualify will opt out. These producers account for about 40 percent of the organic winter pear pack. Among the other five handlers, three indicated that few of their producers were eligible (100 percent organic) and the other two did not provide an estimate. Two of the three handlers with few eligible producers said that it would be a mistake for organic producers not to pay the promotion assessment since organic production is increasing. They believe that organic producers will need the resources and skills provided by PBN to reach retail stores and conventional supermarkets.

Organic kiwifruit handlers were asked for their views on CKC's advertising and promotion programs. Four of the eight handlers spend money to advertise their own product. One of those handlers believes that CKC's advertising has expanded the demand for all kiwifruit but that recent budget reductions have restricted the impact of the programs. Seven of the eight handlers stated that present CKC advertising and promotion does not help market organic kiwifruit.

Impressions and Opinions

This research generated some distinct impressions and opinions that the authors record here with the caveat that they are only impressions and opinions. They are based on meetings and conversations with marketing order administrators, interviews with and written comments from organic handlers and producers, industry data, and the process of summarizing all of the information collected. These comments are offered as an additional context in which to view the results reported.

The cooperation of all of the participants in the study was impressive. All are extremely busy people who generously took time to answer questions, explain complex points, and provide confidential data and information. They are also deeply committed to their industries, have a sincere belief in what they do, and are keenly interested in strengthening the industry even when they disagree about how best to do it.

The marketing order administrative committees conduct many programs and activities that, while not specifically directed toward organic products, cannot help but benefit individual organic products and producers. For example, a well-structured and meaningful set of grades and standards based on customer needs and preferences provides for efficient functioning of markets and improved returns to producers. Organic handlers as a group are very concerned about providing high-quality products for their customers, and the present sets of grades and standards appear to be serving them well. Suggestions for changes in minimum grade standards by organic handlers tended to be in the direction of higher standards.

Despite some strong criticism from individual handlers regarding their administrative committees' tendency to direct research at conventional production and producers, this study suggests that organic producers can benefit substantially from marketing order research programs. There are two possible problems with current research programs and their results. First, there appear to be cases where individual researchers, research committees, and marketing order administrative committees could do a better job of communicating results to organic producers. For example, they could prepare summary reports of the research that include the results' implications for organic producers. Second, there are organic and conventional producers in each industry who oppose marketing order programs (for a variety of reasons) and who consequently will ignore anything generated by an administrative committee.

Organic producers and handlers are not alone in their skepticism. Ongoing legal actions directed at mandatory assessments for generic commodity advertising are evidence of similar opposition among conventional producers.

Organic producers are asking two questions regarding such assessments: (1) to what extent does an organic product benefit from an increase in demand for a commodity and is the benefit greater than the cost, and (2) would a separate advertising and promotion program for the organic product yield higher returns? It appears that organic producers do benefit from programs that increase overall demand for a commodity. The conventional commodity price provides a floor for

the organic product price, and organic products cannot always be sold at a premium, as noted for kiwifruit and winter pears.

Several organic handlers indicated their belief that the markets for organic and conventional commodities are separate markets but that there is a positive relationship between organic and conventional prices. If this is true, organic producers benefit from increased demand for the conventional commodity. If the degree of substitutability between organic and conventional products is low (they are essentially different products), an advertising and promotion program stressing the favorable characteristics of the organic product may be more effective than a generic program. This is consistent with the general observation that it is often more profitable for a small firm to capture market share from a competitor than it is to increase total demand for a product. The problem for the small firm, the organic producer in this case, is raising the funds required for an effective advertising program.

The assessments paid by organic producers and handlers are relatively small and, if segregated, would buy little in the way of separate advertising programs for the organic product. Thus, organic producers' contributions to the overall commodity program may provide access to advertising that would not be possible under a separate budget. Organic producers and handlers gain access to retailers, trade information, and such things as point-of-purchase materials, Web sites, and organized public relations. Simply becoming more involved with the administrative committees individually or better organizing as an interest group within the order could yield dividends. Consequently, it appears that marketing orders can serve the needs of both organic and conventional handlers and producers.

Still, the reservations some organic handlers and producers expressed were not a surprise. They question the value they receive for the mandatory assessments paid. Organic producers and handlers are pioneers and many are also individualists. They face all of the production uncertainties confronting conventional producers while foregoing some well-developed risk-reducing technologies. Those who have adopted organic production methods to improve returns know that an increase in total production can easily erase any organic price premium.

Handlers expressed their views on the important issue of the degree of substitution between organic and conventional products. While the question cannot be settled without additional research, handlers' comments did provide some important insight.

First, there is asymmetric substitutability on the supply side. An organically produced product that meets minimum quality standards can be sold either as organic or as conventional but only organically produced product can be sold as organic. In terms of appearance, there is no way to distinguish an organic almond, kiwifruit, or pear from a conventional one. Some organic handlers believe that their organic product is superior to conventional product in terms of characteristics such as taste or storability, but such differences are difficult to distinguish and measure.

On the consumer side, there is a segment of the market that demands organically produced products, is willing to pay a premium price for those products, and relies on third party certification and labeling to identify them. There are also consumers who purchase both organic and conventional products based on availability and relative prices. The future for organic products depends, to a certain extent, on the size and growth of the market segment that strongly prefers organically produced products and is willing to pay a premium. The size of this segment is not clear, but organic production accounts for a little more than 6 percent of California kiwifruit and 2.75 percent of winter pears (Table S.2). Price premiums for organic kiwifruit and winter pears have been decreasing as production has increased, and handlers for both commodities report that they have sold organically produced product in the conventional market. A portion of organic fruit sales in conventional markets is fruit of lesser quality that does not meet organic customer quality preferences. Organic handlers for both commodities are concerned that increasing organic production will place greater downward pressure on the price premium for organic products.

Case Studies

Details of the information collected and assembled about organic production and marketing for California almonds, California kiwifruit, and Washington-Oregon winter pears, together with organic producer/handler views on marketing order provisions, are assembled in the case studies that follow. In particular, questions regarding consumer substitution between organic and conventional products, views on the effects of quality standards, and benefits of advertising and promotion programs on organic products raised in this summary are presented in more detail in the case studies.

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CASE STUDIES

1. CASE STUDY: CALIFORNIA ORGANIC ALMONDS

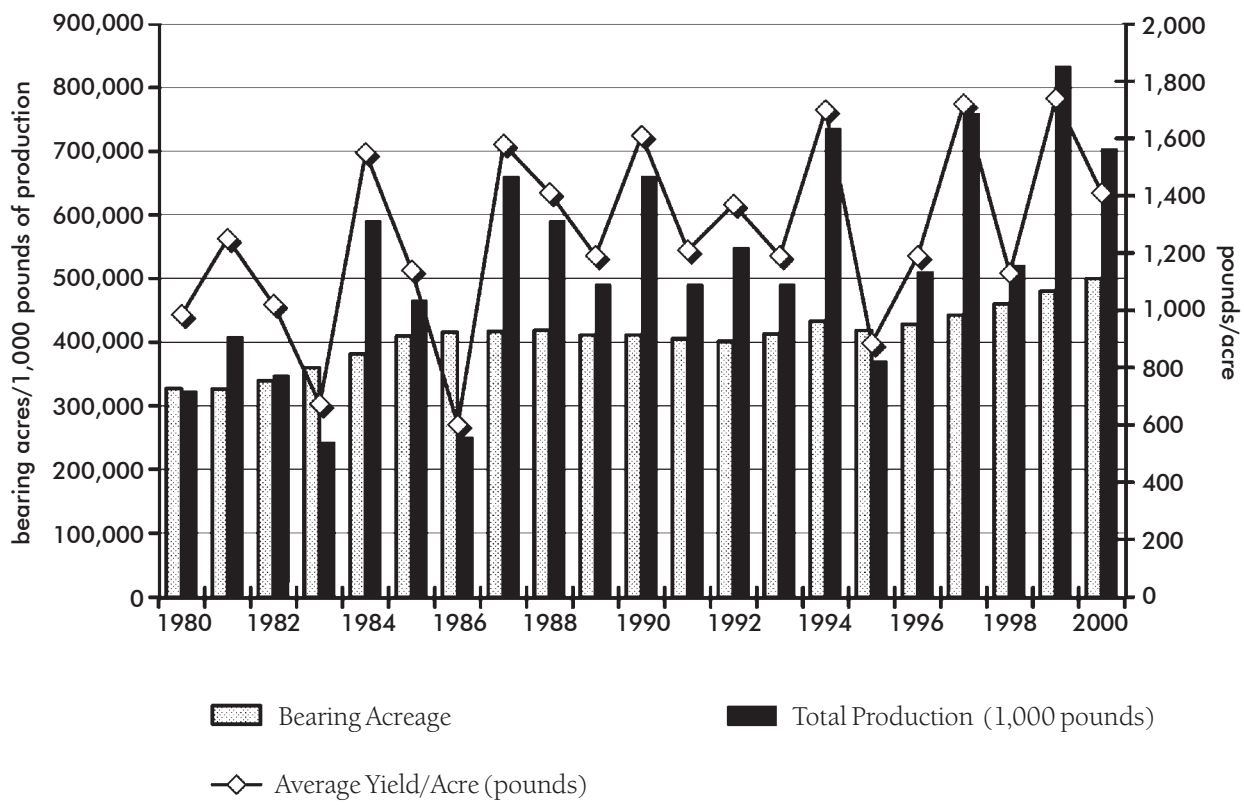
The federal marketing order for California almonds (Marketing Order 981 as amended), first effective in 1950, regulates the handling of all almonds produced in the state. It authorizes production research, market promotion and development, and paid advertising. It also includes quality control regulations and volume control measures in the form of allocated and unallocated reserves. All of the provisions of the marketing order except volume control are presently being used. In addition, almonds received by handlers are subject to mandatory inspection and reporting requirements. To date, the order's requirements have been the same for conventional and organic almonds, but this situation may change when rules are issued for the 2002 Farm Bill. On December 1, 2003, the U.S. Department of Agriculture (USDA) proposed amendments to 28 fruit and vegetable marketing order programs that authorize market promotion activities. The marketing order for California almonds is among the programs affected by the amendments. Specifically, growers who are 100 percent certified organic will be exempt from commodity promotion assessments.

The Almond Board of California (ABC), composed of five producers and five handlers elected by the industry, administers the marketing order. As part of its administrative function, ABC collects and disseminates economic and industry statistics.

California Production

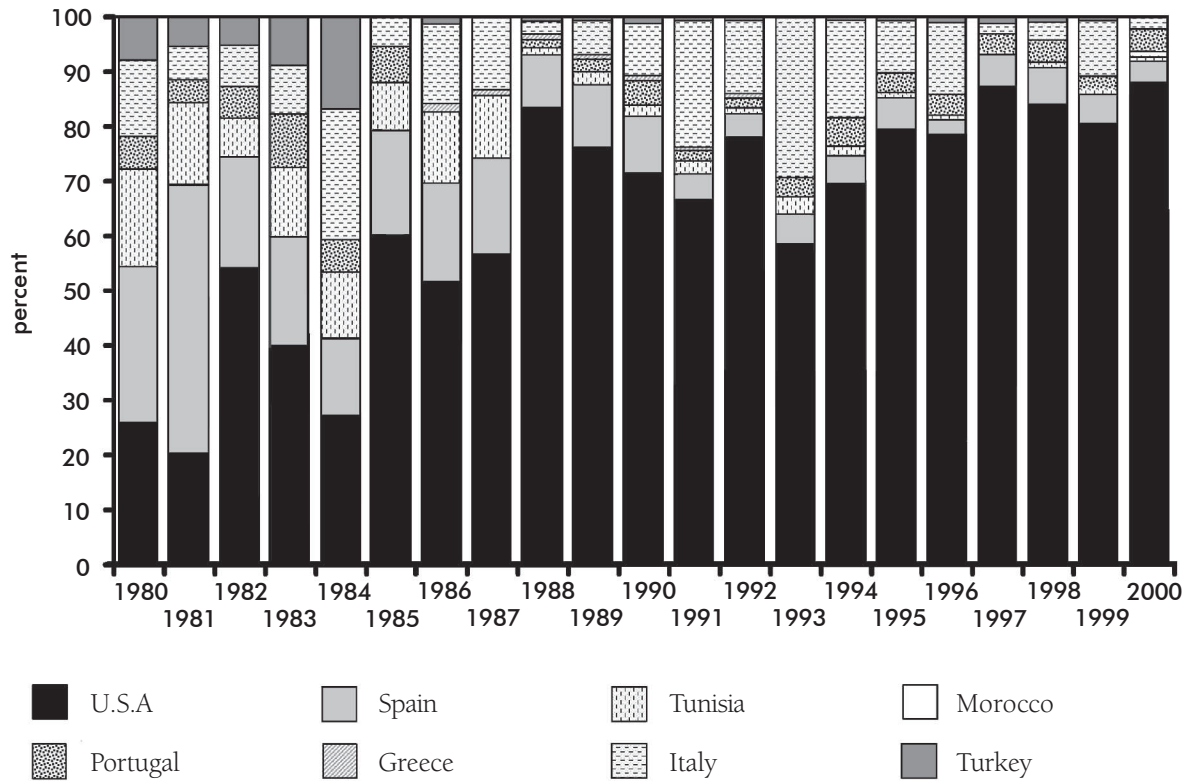
California's almond industry expanded production from about 45 million pounds produced on 90,000 acres in 1950 to some 830 million pounds from approximately 525,000 acres in 2001. According to the

Figure 1.1. California Almonds: Bearing Acreage, Total Production, and Average Yield Per Acre, 1980–2000



Source: California Agricultural Statistics Service, *California Fruit & Nut Acreage*, annual issues.

Figure 1.2. Quantity of Almond Exports from Major Worldwide Producers, 1980–2000



Source: FAOSTAT (Food and Agriculture Organization of the U.N. Statistical Database).

California Agricultural Statistics Service (CASS), the objective forecast for California's 2002–03 almond crop is 980 million meat pounds from 530,000 acres. While this will be the largest almond crop on record, recent new plantings and nonbearing acreage totaling 70,000 acres guarantee even larger crops in the future.

The growth of California's almond industry from 1980 through 2001 is shown in Figure 1.1. Bearing acreage, which had reached 326,800 acres by 1980, continued to trend up through the 1980s and 1990s, reaching 500,000 acres in 2000. Average yields varied significantly from year to year, ranging from a low of 601 pounds per acre in 1986 to a high of 1,740 pounds per acre in 1999. Note that there is some evidence of alternate bearing (high yields followed by low yields), but there are examples of yields decreasing or increasing in two consecutive years (1982–83, 1985–86, 1988–89, and 1996–97). The annual variation in total crop size is due to year-to-year variations in average yields and not annual changes in bearing acreage.

As the world's leading almond producer, California accounted for 41 percent of total annual world almond production for 1996 through 2000. Spain, the second largest producer, accounted for 27 percent of world production during the same period, and the remaining 32 percent was divided among Portugal (1 percent), Greece (5 percent), Turkey (4 percent), Tunisia (6 percent), Morocco (7 percent), and Italy (9 percent). California dominates world exports to an even greater extent, accounting for 85 percent of total exports by volume from 1996 through 2000 (Figure 1.2).

Industry observers generally agree that the almond marketing order has been an important factor in the growth and development of California's almond industry. An Agricultural Marketing Service (AMS) review of the marketing order dated June 14, 2002, concluded that the marketing order has been used effectively in expanding markets and in finding new uses for almonds to absorb increasing production. The report also notes that nearly 90 percent of the producers who

voted in a 1998 continuance referendum supported the marketing order and that both handlers and producers support marketing order activities that help ensure marketing of a high-quality product in expanding markets.[5]

California Organic Production

Data on organic almond production and sales have only recently become available and are not comprehensive. Data series on organic acreage and prices are not available, but the handler interviews enabled development of some estimates.

ABC indicates on its Web site that 16 of the state's approximately 110 almond handlers market organic almonds, all of whom were contacted. One no longer handles organic almonds and another processes but does not market them. Information was obtained from 12 of the remaining 14 handlers regarding their views on the impacts of the order on organic almonds and developments in organic production and marketing. Five of the handlers produce, pack, and market their own organic almonds. Three produce organic almonds and also pack organic almonds for other producers. The remaining four handlers do not produce almonds. Among the seven handlers who pack almonds produced by other growers, two provide custom packing services for producers who market their own almonds, one markets almonds on a commission basis, and the other four purchase the almonds from the producers and do all the processing and marketing.

According to the most recent CASS survey, almond orchards in California in 2002 totaled 590,000 acres—530,000 bearing and 60,000 nonbearing. The bearing acreage included 2,912 acres of organic almonds (0.56 percent of the total), as reported to the California Organic Program. This figure is consistent with information provided by handlers. The 12 organic handlers noted above handled organic production for 81 growers whose organic acreage was estimated at 2,796. The remaining 163 acres is apparently in the hands of the other two handlers.

Some information on average yields and production of organic almonds was obtained from seven of the cooperating handlers for crop years 1999, 2000, and 2001. The variation in average yields among them was significant, ranging from 205 to 1,602 pounds per acre. Handlers attributed the variation to weather conditions and the varying ages of trees; some orchards were just beginning to come into production. Average yields for the California almond crop as a whole for 1999 and 2000 were 1,729 and 1,397 pounds per acre. Annual average organic yields for the seven handlers for crops in 1999, 2000, and 2001 were 952, 1,327, and 1,019 pounds per acre, respectively. Combining these average yields with reported organic acreage generates an estimate of production for 2001–02 of somewhat more than three million saleable pounds, which is less than 0.4 percent of total production.

Two cost of production studies for organic almonds conducted in 1992 and published by the University of California Cooperative Extension Service at Davis compared microsprinkler and flood irrigation techniques. Similar studies using the same irrigation techniques were completed for conventional almonds in 1998. To compare organic and conventional costs of producing almonds in California, the costs used in the 1992 budgets in the two organic studies were updated to 1998 dollars. The comparison indicates that total costs per acre (excluding marketing/handling costs) for organic production are lower than for conventional production. With sprinkler irrigation, organic costs of production were $2,514 per acre, compared to $3,003 for conventional production. With flood irrigation, organic costs of production were $2,470 per acre, compared to $2,944 for conventional production. Thus, the per-acre cost of production is 16 percent lower for organic almonds than for conventional almonds regardless of which irrigation technique is used. Cultural costs (excluding harvest costs) are greater for conventional production, mainly because of pest control measures, which imply more material, machine labor, and fuel costs. However, the budgeted yields for conventional almond production were 2,000 lbs per acre, compared to 1,550 lbs for organic almonds. Using these yields, the cost per pound was lower for conventional than for organic:

[5] The AMAA (Agricultural Marketing Agreement Act of 1937), as amended, permits a cooperative association to vote for its members. Blue Diamond, the largest almond processor, regularly casts a block vote for its producer members.

with sprinkler irrigation, conventional was $1.50 per pound and organic was $1.62 per pound; with flood irrigation, conventional was $1.47 per pound and organic was $1.59 per pound.

Demand

Quantitative measures of the demand for organic almonds could not be made due to a lack of price-quantity data. However, all of the handlers and producers interviewed for this study indicated that the balance of supply and demand for organic almonds yields premium prices. The amount of the premium varies; eight of the 11 handlers who commented on prices indicated that organic almond prices are at least twice as high as conventional, and three handlers indicated that organic prices are at least three times higher. Specifically, one handler who sells both conventional and organic almonds noted that his 2001–02 conventional prices were $1.20 to $1.40 per pound and his organic prices were $3.00 to $3.50 per pound. Another listed 2001–02 conventional prices of $1.40 to $1.50 per pound and certified organic prices of $3.80 to $4.00 per pound. Some small handlers and sellers with specialized market niches reported prices for organic almonds ranging up to four times higher than for conventional. One handler observed that "There is a demand for organic almonds, but the organic market is underdeveloped. There are not enough growers, the price is too high, and there is not enough quality product."

Handlers made some interesting comments on the factors that affect the price of organic almonds and seasonal price movements. Several stated that there is a large unmet demand for organic almonds and that they have customers who would like to obtain more almonds at existing premium prices. There appears to be some non-price rationing taking place, with some handlers dividing production among buyers on the basis of past orders.

Four of the five handlers who market both organic and conventional almonds and one large organic handler see correlation between organic and conventional prices, with organic prices two to four times higher. Two of these handlers indicated that large buyers expect the two prices to rise and fall together. The other seven handlers believe that there is little or no correlation for price between organic and conventional almonds. Instead, they see the two as separate markets and the price of organic almonds being influenced mostly by the quantity produced.

A recurring question with organic commodities is the degree of substitution between organic and conventional product and whether or not the two are in the same market. There is a degree of separation on the supply side—conventional almonds cannot be sold as organic, but organic almonds can be sold as either organic or conventional. This flexibility on the supply side tends to place a floor under the price of organic almonds at the conventional price. None of the handlers interviewed reported recent sales of organic almonds as conventional because of the large price premium and unmet demand for organic almonds. One handler said he had in the past sold organic almonds at conventional prices or for use as conventional almonds but did not explain the circumstances. Another handler, who has never sold organic almonds for conventional prices, noted that "when organic almond prices were very high in the late 1990s, some handlers waited too long and had to sell some organic almonds for conventional use." This type of miscalculation, which has not occurred recently, could probably have been avoided had separate monthly position data for organic almonds been available. Most industry observers and all but two of the handlers interviewed expect organic almond production to increase over time and the price differential between organic and conventional almonds to decrease. Economic theory suggests that production will adjust over time until the price differential between organic and conventional almonds reflects differences in costs of production and production risks.

Clearly there are customers with a strong preference for organic almonds who are willing to pay a premium, but the size of that market segment is not known. However, based on what is known about organic markets for kiwifruit and winter pears, it appears that the organic market segment for almonds is presently 5 to 10 percent of the total domestic produce market. The characteristics of demand for organic almonds for

this segment (price and income elasticities) are probably similar to the demand for conventional almonds and that demand will continue to increase.[6]

Handlers were asked to describe any differences they have observed between consumers of organic and conventional almonds. Three handlers stated either that they were not aware of any differences or that they did not believe that existing differences were significant. The nine handlers who described different characteristics for organic and conventional almond consumers often mentioned more than one difference. They described organic consumers as follows (frequency of mention appears in parentheses): healthier or more health conscious (5); more aware and more concerned about the environment (3); more or better educated (3); wanting the best product (3); having higher incomes (2); willing to pay more for organic products (2).

A reviewer of this study asked why, if organic almonds have a separate market, they do not need their own marketing order. The answer, based on comments from organic handlers and ABC representatives, is along the lines of "on the one hand, and then on the other hand." First, with regard to separate markets, there is a segment of organic customers that probably will not substitute between organic and conventional product regardless of the price differential. Then there are consumers who prefer organics and are willing to pay some premium for them, with the amount of premium they will pay varying by individual. Finally, there are consumers who do not have a clear preference and will purchase the least expensive product. As the supply of organic almonds reaches beyond the customers who will only purchase organics, substitutability between organic and conventional almonds will increase. The economic feasibility of a separate marketing order for organic almonds depends on the number of committed organic producers and the amount of organic almonds produced since organic producers would have to provide the required financial support. Given the overhead costs associated with operating a marketing order program, organic almond producers can probably maximize their benefit-cost ratio by continuing to work with ABC to fund research and promotion that clearly benefits organic producers.

Marketing Organic Almonds

Production and sales of organic almonds are comparatively recent developments in California. Two of the handlers in this study began producing organic almonds almost twenty years ago and are pioneers in marketing them. Four more producer/handlers began producing and marketing organic almonds between 1990 and 1995 because of concerns about health and the environment. Premium prices for organic almonds have also provided an incentive to produce, process, and market certified organic product. More recent entrants in the organic market expressed concerns about health and the environment but mentioned the price premium as an important factor in their decision to produce and sell organic almonds. The four handlers who do not produce organic almonds began to handle them in response to their growers, who were shifting to organic production; to fill out an existing organic product line; or to take advantage of higher margins.

Organic and conventional handlers package almonds differently, in part because the organic industry is young and volumes are small, but also because of the constraints imposed by requirements of organic production. Several handlers mentioned potential insect problems with in-shell almonds because fumigation of stored almonds, standard practice for conventional almonds, is not permitted for organic production. As a result, only three of the organic almond handlers market any in-shell nuts and in-shell sales account for less than 10 percent of their total sales. Reported volumes suggest that less than 1 percent of organic sales are of in-shell almonds. In contrast, some 12 percent of overall 2000–01 export almond shipments were in-shell. While a few organic handlers market manufactured products, most organic sales are in the form of whole shelled almonds.

[6] The world demand for almonds has been growing over time with increases in population and income. In an earlier study, Alston et al. found that almonds are a normal good with positive income elasticities in all countries analyzed. The income elasticity of demand was approximately unitary (+1.00) in the U.S. and was elastic in some of the largest export markets, including Germany (+1.32), Japan (+1.85), and Canada (+1.50). The estimated price elasticity of demand was elastic in the U.S. (−1.08), the Netherlands (−1.10), and Canada (−1.28), but inelastic in other markets.

Even though the organic almond product mix differs from conventional almonds, organic handlers as a group rely on channels of distribution that are similar to those used for the conventional product. Some of the smaller organic handlers tend to concentrate on particular segments. For example, five of the organic handlers interviewed sell all of their output to domestic customers, with the majority of product going to wholesale distributors. The other seven handlers market their organic almonds to a mix of domestic and export buyers. Only two of the seven who export sell more than half of their almonds to foreign buyers. Five of the 12 handlers have some direct-to-consumer sales, including mail order and Internet sales. In the aggregate, organic handlers reported selling approximately 65 to 70 percent of volume to distributors, 20 to 25 percent to manufacturers, and the remainder direct to consumers or to retail outlets. Based on the responses of handlers in this study, about 25 percent of recent organic almond sales were to export markets, with important destinations including Canada, Germany, and Japan. This is quite low compared with the almond crop as a whole in California, 71 percent of which was exported in 2000–01.

Organic Handler/Producer Views on the Marketing Order

ABC collects a marketing order assessment of 2.5 cents per pound from handlers for all almonds produced in California. Given recent large almond crops, this small per-pound assessment still provides significant resources to administer and fund marketing order programs and activities. For example, the ABC budget for the 2001–02 marketing year totaled more than $17 million. Budget allocations included domestic advertising and public relations (51.4 percent), international public relations (9.3 percent), developing markets (5.8 percent), nutrition research (5.8 percent), production research (3.5 percent), market research (1.2 percent), administration (20.5 percent), quality control (1.1 percent), and grants (1.3 percent). Note that the contribution made by organic almond growers amounts to less than 0.5 percent of the total funds available to ABC given an estimated organic crop of about three million pounds.

Organic almond handlers were asked for their views on the federal almond marketing order program and its provisions. Their comments are summarized by major marketing order provision.

Minimum Grade Standards

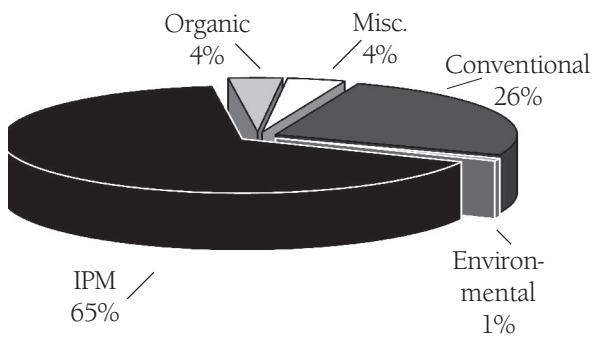
The USDA publishes grades and standards for shelled and in-shell almonds that are applied on a voluntary basis to transactions between buyers and sellers. The grades for organic and conventional almonds are identical.[7] Mandatory use of minimum quality standards for organic almonds was generally supported by the organic handlers interviewed. When asked if the standards impact organic and conventional almonds differently, three of the 12 handlers stated that it is probably harder or more expensive for organic almonds to meet a specific grade. The other organic handlers stated that there is no difference. Two of the organic handlers stated that they have had no trouble meeting the highest grades.

Seven of the 12 handlers agreed that minimum grade standards help them sell organic almonds. They indicated that the grades are known and respected by buyers worldwide as an indicator of quality. Three handlers did not object to the use of standards but indicated that their buyers already demand quality and that the almonds must look good and satisfy existing standards in order to be sold. Two handlers said that minimum quality standards do not help them market organic almonds.

Handlers were asked how they dispose of almonds that do not meet minimum grade standards. The large-volume handlers tend to dispose of subgrade almonds through a variety of organic product outlets while smaller handlers tend to use only one or two outlets. Organic almonds that are not edible are typically sold to oil manufacturers or for livestock feed. Low-grade organic almonds are often processed (roasted, sliced) for use as ingredients in confectionery and baking applications or made into organic almond butter.

[7] There are seven grades for shelled almonds (U.S. Fancy, U.S. Extra No. 1, U.S. No. 1, U.S. Select Sheller Run, U.S. Standard Sheller Run, U.S. No. 1 Whole and Broken, and U.S. No. 1 Pieces) and four grades for in-shell almonds (U.S. No. 1, U.S. No. 1 Mixed, U.S. No. 2, and U.S. No. 2 Mixed).

Figure 1.3. Distribution of ABC's Budgeted Production Research Expenditures, 2000–01 through 2002–03



Source: Almond Board of California. Personal communication from almond specialist Dr. Bruce Lampinen, August 2002.

Minimum quality standards is the least controversial provision of the marketing order for organic almond handlers. Most indicate that their customers require a quality product and that they would grade their product regardless of marketing order provisions.

Research

ABC funds research in nutrition and production. Its nutrition research program focuses on issues relevant to consumer health concerns and provides health-related information for domestic marketing programs. ABC allocated $1 million to nutrition research projects during 2001–02. Recent nutrition budget allocations include weight control (3 percent), cardiovascular health (24 percent), composition (20 percent), antioxidants (19 percent), cancer (14 percent), partnerships (12 percent), and research services (8 percent). Research findings that almonds are a leading natural source of vitamin E, a powerful antioxidant, are being used in ABC marketing programs.

Industry-funded production research has a long history. ABC funds production research projects that examine orchard management, variety development, pests, diseases, irrigation, tree nutrition, and pollination. (See the Appendix for a list of recent research projects and budgets.) In 2000–01, ABC funded 23 production projects totaling $445,058. In 2001–02, there were 30 production research projects totaling $543,591, and the proposed budget for 2002–03 allocates $583,604 to 28 projects. Over the course of those three years, then, ABC budgeted $1,572,252 for production research (excluding contingency expenditures). The distribution of funds by subject area is illustrated in Figure 1.3.

Most of the production research is designed to generate primary information about irrigation, cultural practices, pest control, and disease control that is valuable to both conventional and organic producers. The majority of the funds (65 percent) were allocated to integrated pest management (IPM) projects that emphasize conventional agriculture. These projects typically included a conventional treatment in the research design. One project (4 percent of funds) emphasized organic production while 26 percent of the funds were allocated to projects that primarily benefit conventional almond producers. The environmental project expenditure (1 percent of funds) was for research on ways to reduce the impact of dormant sprays (used only in conventional agriculture) in water sources.

ABC spent 51 percent of its 2000–01 operating budget on domestic public relations and advertising primarily focused on consumers (70 percent went to consumer advertising and 18 percent to consumer public relations). The public relations program targeted health-conscious consumers via cooking shows, national morning news programs, and ABC's consumer Web site. Crespi and Sexton found that ABC's promotion program has been very effective in expanding the demand for almonds and increasing producer profits. They estimated that marginal dollars expended promoting almonds have yielded a return to producers somewhere in the range of 3:1 (a $3 return for every $1 expended) to 7:1.[8]

The almond marketing order has assessment credit-back provisions that allow handlers to receive credit toward their assessments for their own advertising expenditures. Briefly, a handler gets $1.00 of assessment credit for each $1.50 of approved advertising and promotion expenditures and the credit-back is limited to one-half of a handler's total

[8] ABC did not conduct advertising and promotion from 1994–95 through 1996–97 due to litigation. Crespi and Sexton estimated that the suspension cost California almond producers between $90 and $234 million in profits.

assessment. Organic handlers have taken advantage of this provision.

The handlers were asked if they advertise their almonds and for their views on the effectiveness of ABC's advertising and promotion program. Specifically, they were asked whether ABC programs help them market their organic almonds. Five of the 12 handlers reported no additional advertising expenditures. The other seven handlers reported spending an additional $600 to more than $50,000 annually for advertising. Four of the handlers reported advertising and promotion expenditures of more than $5,000. The handlers who did the most advertising and promotion tended to spend their funds on trade shows, print media, and in-store promotions. The handlers with small expenditures used natural health magazines, yellow pages, and Web sites.

Views on the contribution of ABC's advertising and promotion to organic almond sales were mixed. The five handlers who did not spend additional funds for advertising and promotion all stated that the ABC program does not help them sell organic almonds. Three of the five, however, indicated that they believe that the ABC program has increased overall demand for almonds. Five of the seven handlers who did some advertising and promotion were supportive of ABC's advertising and promotion program. Three stated that it has an indirect positive effect by increasing the demand for all almonds ("helps sell almonds in general but does not provide direct help to market organic almonds") while the other two indicated that nutrition messages based on ABC's research program help market organic almonds. Two of the larger organic handlers do not believe that ABC's program is effective for either organic or conventional almonds and would prefer to be exempt from assessments for advertising and promotion.

Comments made by the handlers in their answers to other questions help to place their responses regarding advertising and promotion in perspective. Most of the handlers stated that organic almonds are clearly superior to conventional almonds. Reasons given included that organic almonds taste better and are cleaner, healthier, and free of chemicals. One of the handlers mentioning taste stated that "when you eat a whole organic almond, an almond flavor will remain in your mouth for ten minutes. When you eat a conventional almond, the flavor will disappear immediately." Organic handlers and producers recognize that these comparisons will not be featured in ABC advertising and promotion.

When commenting on price differences between organic and conventional almonds, several handlers mentioned that demand for organic almonds has been high relative to supply so they can easily sell more organic almonds at a profit. Two handlers added that they have rationed organic almonds to customers who wanted to buy more than the available supply.

Handlers were asked to suggest improvements that they would like to see made to the ABC advertising and promotion program. All but three of the 12 handlers responded. Three responding handlers who do not support the ABC program believe that closing ABC or exempting organic almond producers from assessments would be an improvement. Three handlers would like to see separate promotion for organic almonds that mentions the advantages of natural products (no chemicals, better taste). One handler would like to see separate research projects designed for the organic industry, even if the funds are a small percentage of the total research budget. Two handlers would like to have ABC collect and report separate statistics for organic almonds.

Reserves

ABC has the authority to set, with concurrence of the U.S. Secretary of Agriculture, both allocated and unallocated reserves for volume control. Allocated reserves permanently divert almonds from primary consuming markets to secondary markets such as oils, animal feed, and disposal. During its first two decades, ABC regularly used allocated reserves to encourage export sales (exports were a secondary market at that time), increase domestic prices, and increase total crop revenue.[9]

Unallocated reserves temporarily restrict the flow of almonds to the market at specific points in time.

[9] Reserves ranging from 10 to 45 percent of total production were used every year except three during the 22-year period from 1951 through 1972 (Bushnell and King).

A percentage of the crop may be withheld at harvest and released at intervals during the marketing season or may be withheld throughout the season and released during the following crop year. Most analysts agree that allocated reserves have much more potential than unallocated reserves to enhance almond prices during a given marketing year. ABC has used volume regulation in the form of an unallocated reserve only twice during the last decade—during the 1994–95 and the 1999–00 marketing years. The most recent use of allocated reserves was very controversial throughout the industry and became an issue during board member elections.

Organic handlers were asked for their opinions about reserves for organic almonds and if the use of reserves created any problems for marketing organic almonds. Two of the handlers did not express any views on the reserve provisions of the almond marketing order. Of the ten handlers who commented, six were strongly opposed philosophically to reserves for organic or conventional almonds. They stated that they "do not believe in reserves" and that there should be a "free market." One stated that "handlers should be free to decide when and how much to store for later sale." The other four handlers saw no reason to have reserves for organic almonds given the tight supply situation relative to demand. Three of the four mentioned that reserves could possibly be useful in the future if organic almonds are overproduced.

ABC effectively exempted organic almonds from the 1994–95 and 1999–00 unallocated reserve programs by including sales of organic almonds to organic outlets as an authorized reserve outlet. Consequently, as expected, most of the organic handlers said that recent reserve programs had not created any problems for them. One handler commented that the larger than usual volume of nuts going to almond butter (one of the authorized reserve outlets) affected his business for organic almond butter by increasing the supply of almond butter. Presumably, a resulting decrease in the price of conventional almond butter was enough to foster substitution by consumers of almond butters made with conventional almonds for organic almond butter.

General Comments on the Almond Marketing Order

Each handler, at the conclusion of the interview, was asked if s/he wanted to offer any observations on the almond marketing order or on marketing of organic almonds that had not already been discussed. Six of the handlers made additional observations, with two commenting on marketing of organic almonds and the other four reiterating criticisms of the marketing order.

One handler commented on alternative approaches to marketing organic almonds. He indicated that trade shows (natural food conferences) were the traditional method for marketing organic products but that he found the shows to be quite expensive relative to the results. He has established a Web site for organic almonds that he feels has been far more cost effective than any of the other approaches he has used.

The second set of handler comments about marketing organic almonds concerned exports, imports, and market development. One handler observed that almost all organic almonds were exported between 1994 and 1998. High prices held back development of domestic sales and slowed export sales. He noted that three or four years ago some handlers held their organic almonds in storage too long and ended up selling them for the same price as conventional almonds. He stated that, thanks to recent increases in the domestic use of organic almonds, handlers have had no problem selling all of their output at premium prices. There are potential problems with continuing high prices, which include supply response and loss of market outlets. The handler observed that some U.S. manufacturers have recently imported lower priced organic almonds from Italy. These developments will put downward pressure on prices for California organic almonds.

The four handlers who commented on the marketing order emphasized earlier points. One handler (who is generally supportive of the marketing order) pointed out that growers have no flexibility in contributing funds to the marketing order (the assessment is fixed at 2.5 cents per pound), that ABC has more funds than it needs, and that it does not help the producers who need it. Another handler said

that ABC "does not participate in the organic market." The other two handlers believe that ABC can have a positive impact through research but not through promotion or reserve programs.

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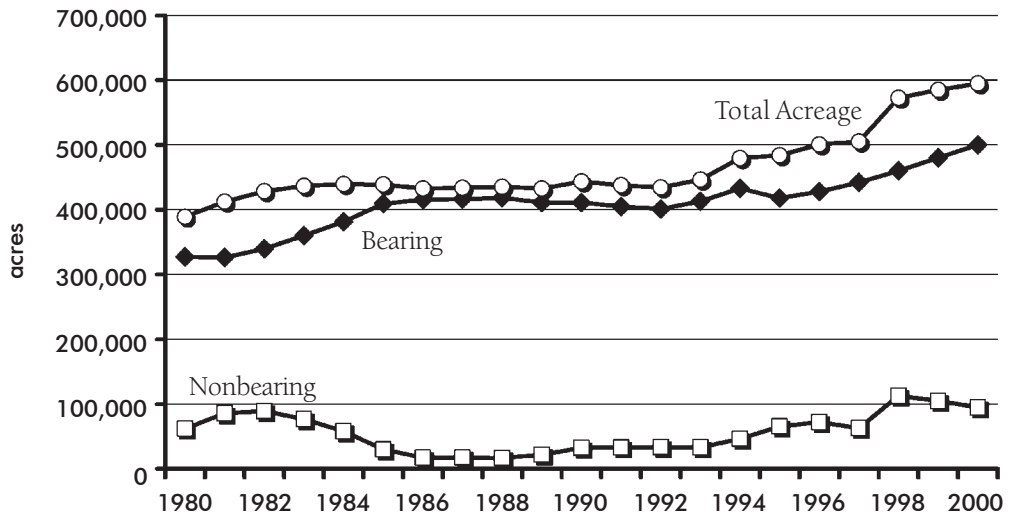
University of California Cooperative Extension. *Sample Costs to Establish an Almond Orchard and Produce Almonds in the Northern San Joaquin Valley – Sprinkler Irrigation*. 1998.

APPENDIX 1

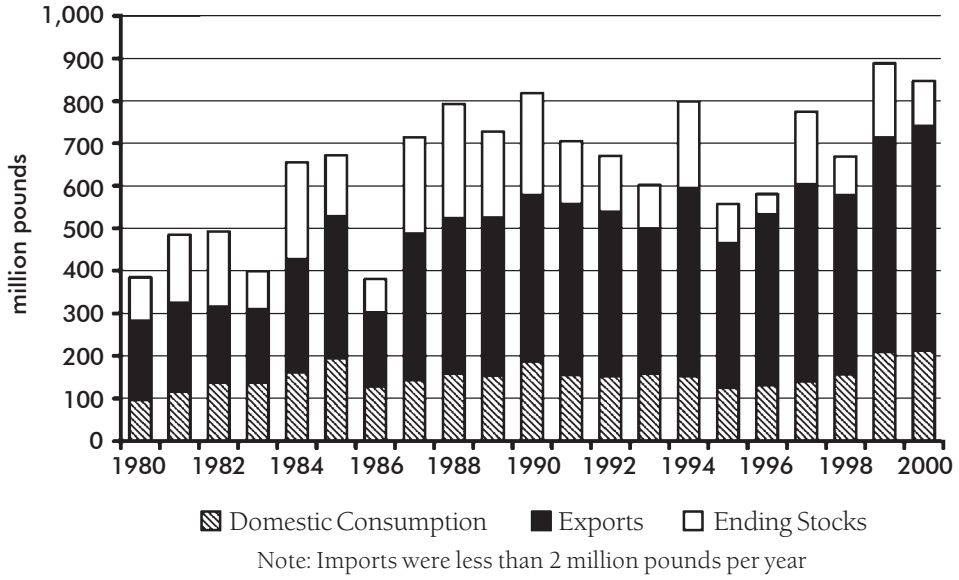
The following five figures illustrate developments in the California almond industry during the period between 1980 and 2001: growth in acreage and production, variability of average yields and production, inverse relationships between total production and average grower price and between price and domestic per capita consumption, average yields for major producing countries, and growth in California's share of world almond exports.

Figure 1.A1. Bearing, Nonbearing, and Total Almond Acreage in California, 1980–2001



Source: California Agricultural Statistics Service, *California Fruit & Nut Acreage*, annual issues.

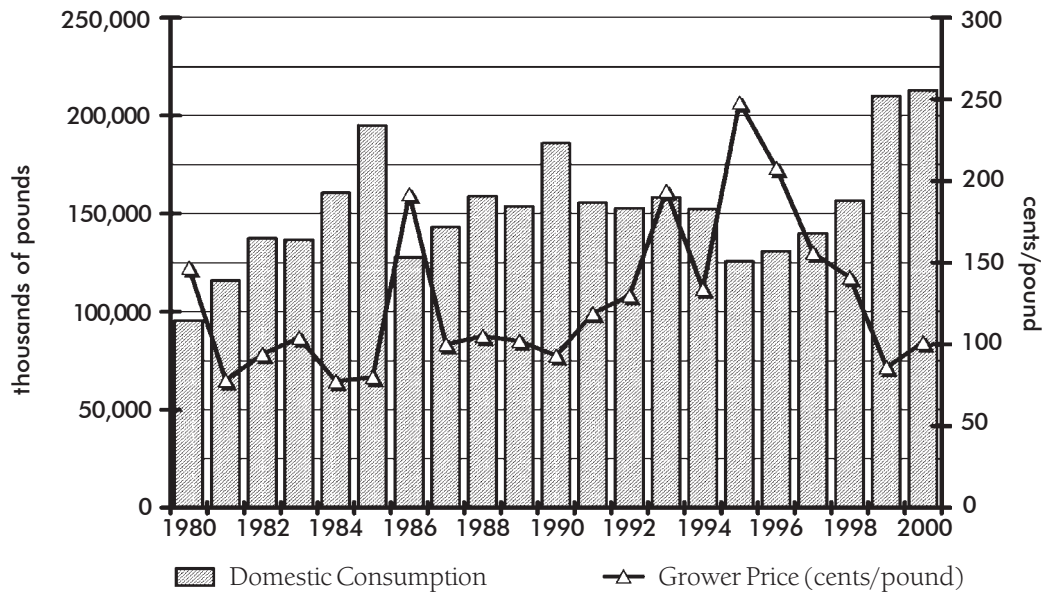
Figure 1.A2. Total Supply Divided into Ending Stocks, Domestic Consumption, and Exports, 1980–2000



Note: Imports were less than 2 million pounds per year

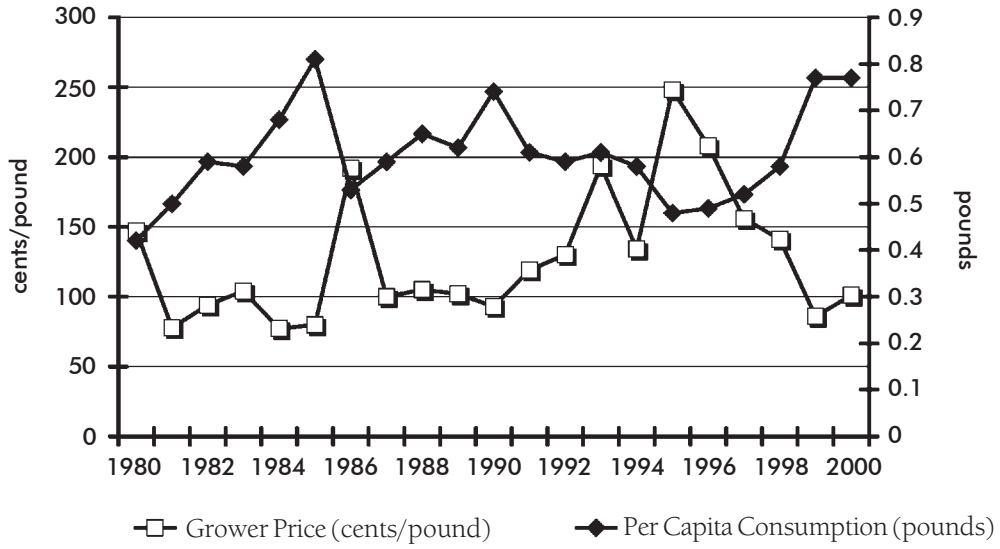
Source: California Agricultural Statistics Service, *California Fruit & Nut Acreage*, annual issues.

Figure 1.A3. California Almonds – Domestic Supply and Grower Price, 1980–2000



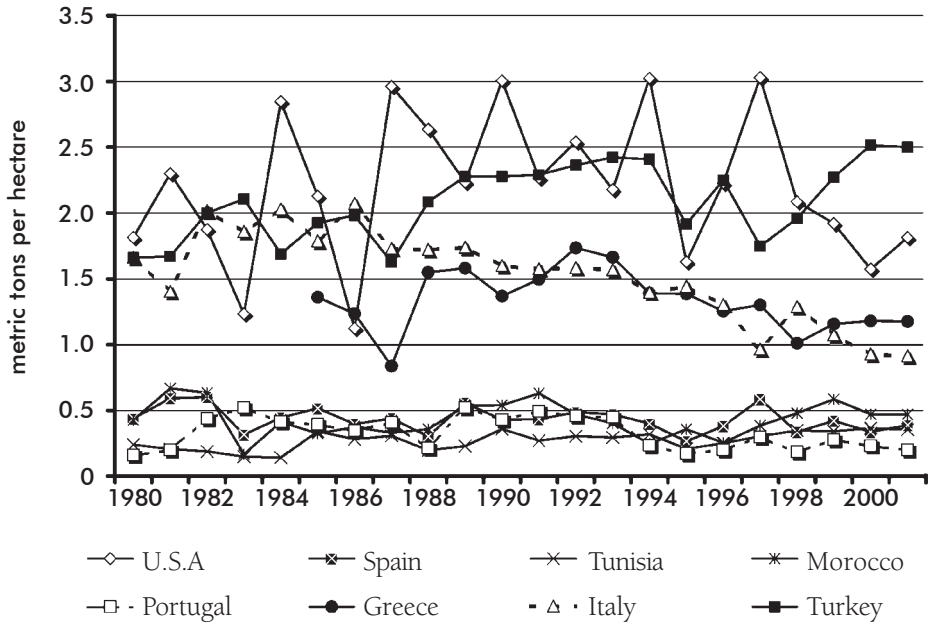
Source: California Department of Food and Agriculture, *Agricultural Resource Directory, California*, annual issues.

Figure 1.A4. California Almonds – Per Capita Consumption and Grower Price, 1980–2000



Source: California Department of Food and Agriculture, *Agricultural Resource Directory, California*, annual issues; USDA Economic Research Service, *Fruit and Tree Nuts Situation and Outlook Yearbook*, 2002.

Figure 1.A5. Average Yield Per Hectare of Principal Almond Producers Worldwide, 1980–2000



Source: FAOSTAT (Food and Agriculture Organization of the U.N. Statistical Database).

Table 1.A1. Production Research Projects Funded by the Almond Board of California in 2000–01

Project Title	Project Leader	Budget	Type
Ant Management in Almonds	Coviello	$35,780	IPM/Conventional
Evaluation of Soft Insecticides and San Jose Scale	Daane	$23,454	IPM
Biological Control of Ants	Oi	$9,080	IPM/Organic
Reducing Impact of Dormant Sprays	Wilson	$4,000	Environmental
Alternative Dispensing Technologies for NOW	Welter	$33,269	Conventional
Insect and Mite Research	Zalom	$28,201	IPM
Potassium Critical Values and Orchard Management	Brown / Weinbaum	$22,504	IPM
Almond Culture and Orchard Management	Buchner	$14,000	Misc. Project
Field Evaluation of Almond Rootstocks	Connell	$9,000	IPM
Self-Compatibility in Nonpareil Almonds	Dandekar / Gradziel	$15,054	Conventional
Physiological Assessment of Critical Value	DeJong / Weinbaum	$8,071	IPM
Continued Investigation into Bud Drop	Duncan	$9,400	IPM
Nickels Soil Lab Projects	Edstrom	$12,500	Misc. Project
Almond Variety Development	Gradziel	$52,500	IPM
Chipping/Shredding Pruning	Hendricks / Duncan	$8,470	IPM
Field Evaluation of Almond Varieties	Micke	$31,020	IPM
Almond Flower Development	Polito	$13,800	IPM
Epidemiology and Management of Anthracnose and Brown Rot	Adaskaveg	$43,800	IPM/Conventional
Biology and Control of Lethal *Phytophthora* Canker	Browne	$14,800	IPM/Organic
Bacterial Canker and Leaf Scorch	Kirkpatrick	$10,000	IPM
Epidemiology and Control of *Alternaria* Leaf Spot	Teviotdale	$30,000	IPM
Effect of Tree Architecture on *Alternaria*	Viveros	$6,417	IPM
Honey Bee Management, Genetics and Breeding	Page	$18,000	IPM
Total		$445,057	

Source: Almond Board of California.

Table 1.A2. Production Research Projects Funded by the Almond Board of California in 2001–02

Project Title	Project Leader	Budget	Type
Evaluation of Soft Insecticides	Daane	$29,848	Conventional
Role of Natural Enemies	Daane	$28,306	IPM
Biological Control of Ants	Oi	$11,400	IPM
Reducing Impact of Dormant Sprays	Wilson	$4,000	Environmental
Insect and Mite Research	Zalom	$29,644	IPM
Xylella fastidiosa and Glassy Winged Sharp Shooter	Purcell	$20,879	IPM
Self-Compatibility in Nonpareil Almonds	Buchner	$18,000	Conventional
Field Evaluation of Almond Rootstocks	Connell	$13,000	IPM
Self-Compatibility in Nonpareil Almond	Dandekar	$15,382	Conventional
Almond Variety Development	Gradziel	$56,100	IPM
Back Up Copy of Molecular Map	Gradziel	$3,200	IPM
Level of Susceptibility to Plum Pox	Gradziel	$8,400	IPM
Spur Dynamics and Almond Productivity	Lampinen	$14,287	IPM
Field Evaluation of Almond Varieties	Lampinen	$32,850	IPM
Blanchability	Lampinen	$2,000	IPM
Deficit Irrigation Management	Shackel	$26,630	IPM
Shaker Injury	Shackel	$7,125	IPM
Potassium Critical Values	Brown / Weinbaum	$23,709	IPM
Pollen Flow and Productivity	Brown / Weinbaum	$17,054	IPM
Bacterial Canker and Leaf Scorch	Kirkpatrick	$12,000	IPM
Epidemiology and Management of Silver Leaf	Adaskaveg	$10,800	IPM
Epidemiology and Management of Anthracnose and Brown Rot	Adaskaveg	$43,300	Conventional
Biology and Control of Lethal *Phytophthora* Canker	Browne	$16,900	IPM/Organic
Continued Investigation into Bud Drop	Duncan	$7,500	IPM
Epidemiology and Control of *Alternaria* Leaf Spot	Teviotdale	$32,000	IPM/Conventional
Effect of Tree Architecture on *Alternaria*	Viveros	$6,417	IPM
Pollen Substitute Diets	Schmidt	$14,400	IPM
Europeans with AHB	DeGrandi-Hoffman	$10,460	IPM
Honey Bee Management, Genetics and Breeding	Page	$18,000	IPM
Varroa Mite Life Cycle	Wardell / DeGrHoff	$10,000	IPM
Total		$543,591	

Source: Almond Board of California.

Table 1.A3. Production Research Projects Funded by the Almond Board of California in 2002–03

Project Title	Project Leader	Budget	Type
Biology/Ecology of SJS Parasitoids	Daane	$17,320	IPM
Leafroller and Leaffooted	Daane	$28,306	IPM
Glassy Winged Sharp Shooter Transmission of *Xylella fastidiosa*	Purcell	$23,091	IPM
Dormant Sprays	Wilson	$6,000	Environmental
Insect and Mite Research	Zalom	$36,102	IPM
Rootstocks	Connell	$13,000	IPM
Self-Compatibility in NP	Dandekar	$17,656	Conventional
Nickels Soil Lab	Edstrom	$18,750	Misc. Project
Almond Variety Development	Gradziel	$63,100	IPM
S-allele Combinations and Pollination	Gradziel	$12,600	IPM
Sonora Staining	Gradziel	$5,300	IPM
Farm Advisor Projects	Krueger	$15,000	Misc. Project
Spur Dynamics	Lampinen	$14,287	Conventional
Field Evaluation of Varieties	Lampinen	$32,850	IPM
Almond Pest Management Alliance	Looker	$38,000	IPM
Deficit Irrigation	Shackel	$26,630	IPM/Organic
Fox Squirrels	Salmon	$9,473	IPM
Crown Gall / Genetically Resistant Rootstock	Sutter	$24,200	Conventional
Anthracnose and Brown Rot	Adaskaveg	$43,300	Conventional
Silver Leaf	Adaskaveg	$10,800	IPM
Alternaria	Adaskaveg	$36,500	Conventional
Replant Disorder and *Phytophthera*	Browne	$16,950	IPM
Plum Pox Disease	Gradziel	$7,800	IPM
Bacterial Canker and Leaf Scorch	Kirkpatrick	$15,000	IPM
Tree Architecture and *Alternaria*	Viveros	$7,939	IPM
European Bee Maintenance	Hoffman	$15,650	IPM
Artificial Diet	Hoffman	$15,000	IPM
Varroa Mite	Hoffman	$13,000	IPM
Total		$583,604	

Source: Almond Board of California.

2. CASE STUDY: CALIFORNIA ORGANIC KIWIFRUIT

California kiwifruit producers are well organized for marketing their crop. They secured legislative approval to establish the California Kiwifruit Commission (CKC) in 1980 and then voted to establish a federal marketing order for kiwifruit in October 1984. The CKC authorizes promotion and research activities. The federal marketing order, administered by the Kiwifruit Administrative Committee (KAC), established mandatory minimum quality standards for grade, size, and maturity. Quality standards were first used for California kiwifruit during the 1987–88 marketing year and were extended to imports of fresh kiwifruit in 1990. Individual handlers pay the mandatory inspection fees, and both CKC and KAC activities are financed by an assessment on all shipments of California kiwifruit. The majority of the funds collected by assessment support CKC's promotion activities. In both 1999–00 and 2000–01, for example, the total assessment was 22 cents per volume fill container (22 pounds per container). In 1999–00, KAC received 5 cents and the remaining 17 cents went to CKC. In 2000–01, KAC received 3 cents and CKC received 19 cents. Based on reported sales, producers and handlers paid approximately $524,500 in 2000–01 and $433,200 in 2001–02 in assessments.

Information on both organic and conventional kiwifruit is assembled and presented here with comparisons where appropriate. Questions of equitable treatment of organic and conventional kiwifruit by the marketing order are addressed where possible. However, because the organic market is relatively new, information on production and marketing of organic kiwifruit is limited.

Production

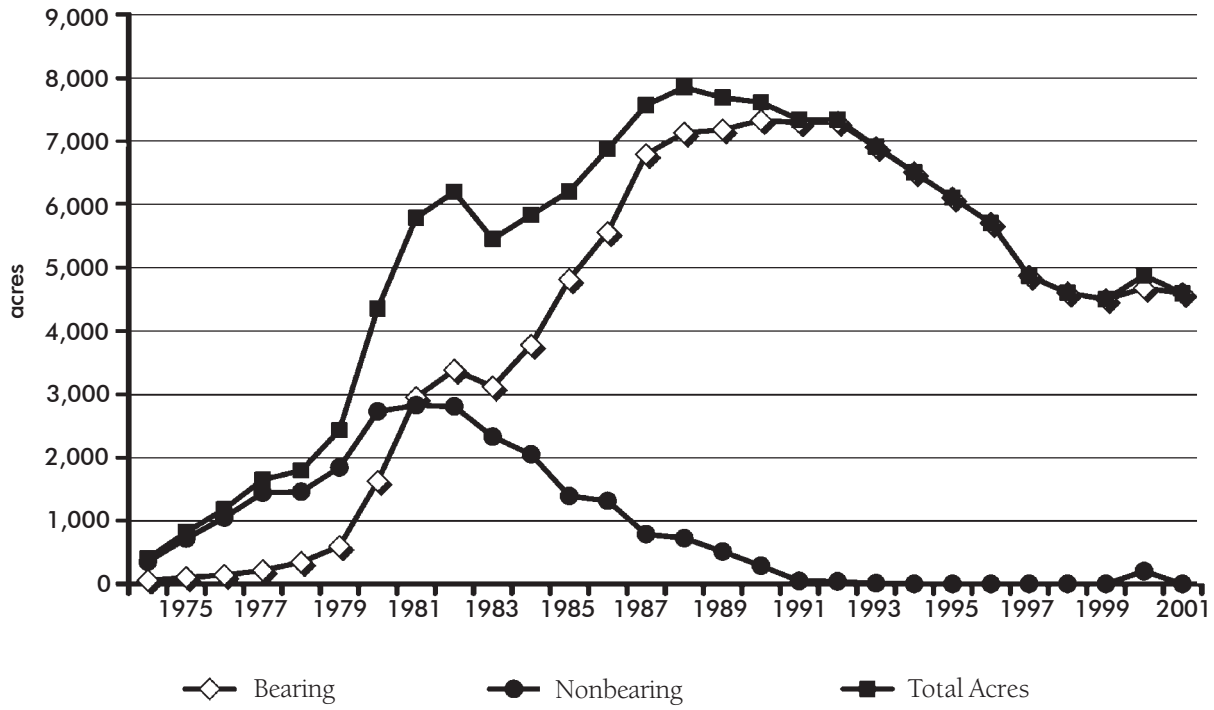
Kiwifruit planting in California began during the 1960s with a few acres. New Zealand exporters working with Freida's Finest, a Los Angeles based specialty crop wholesaler, successfully established a premium priced market for kiwifruit in the U.S. during the 1960s. Two growers imported plants from New Zealand in the mid-1960s to establish California's first kiwifruit vineyards. Nursery production of kiwifruit began in the Chico area during the 1960s as well, and California plantings totaled about 75 acres by 1970. Commercial production was established in the 1970s. The California Agricultural Statistics Service (CASS) first reported kiwifruit acreage data in 1974—405 acres, of which 56 were bearing and 349 were nonbearing. Two factors—very high projected per-acre income[10] and favorable income tax treatment for development expenses—combined to encourage rapid expansion of kiwifruit plantings during the 1970s and early 1980s. Acreage increases are illustrated in Figure 2.1. Most of the early individual plantings were significantly small in scale by California standards at one to five acres. As growers gained experience with the new crop, the acreage and size of plantings expanded, resulting in a sustained increase in kiwifruit acreage that extended through 1988. Total acreage peaked at 7,851 acres in 1988 and bearing acreage peaked at 7,330 acres in 1990. As new plantings diminished and existing plants were removed, bearing acreage decreased to 4,867 in 1997 and has since ranged from 4,500 to 4,875 acres (Table 2.1).

As new kiwifruit acreage came into production in California and in other areas around the world, prices began to drop. The record high production of more than 52,000 tons in 1992 was accompanied by record low average prices. In response, growers decreased new plantings, removed marginal acreage, and investigated alternative methods for reducing unit costs of production and/or improving market returns. Severe price pressures in the early 1990s encouraged some growers to convert their kiwifruit acreage to organic production. Since the transition and certification process for organic production by law requires three years, significant production of organic kiwifruit is a recent development.

Organic kiwifruit production in California is feasible. There are usually few insects or diseases that

[10] One article, for example, described expected yields and prices during the early 1970s: "Conservative estimates for crop yield are 6,000 pounds per acre in the fourth year to 32,000 pounds per acre in the eighth year. Current wholesale prices average about $1 per pound with retail prices set accordingly." (*Western Fruit Grower*, March 1973).

Figure 2.1. California Kiwifruit Acreage, 1974–2001



Source: California Agricultural Statistics Service, *California Fruit & Nut Acreage*, annual issues through 1996. California Kiwifruit Commission, 1997–2000. Acreage for 2001 is estimated.

cause major problems, weeds can be controlled through cultural practices, and nutrient removal by kiwifruit is minimal (Hasey et al. 1994). To determine the economic feasibility of producing organic kiwifruit in California, Hasey et al. (1997) compared a kiwifruit vineyard that was converted to organic production with a matched, conventionally farmed vineyard for three crop years: 1990, 1991, and 1992. Costs and returns were compared for the two vineyards for 1992, the first year that the organic fruit qualified to be sold as certified organic. Hasey et al. found that it cost more to grow kiwifruit organically, with the difference in cultural costs due mainly to higher costs for fertilizer and weed control in the organic system. The organic system yielded more per acre (meaning higher harvest costs) than did the conventional system. In addition, the organic kiwifruit suffered fewer repack losses and received higher prices than did the conventional fruit. Tests for post-harvest quality found that the organically grown fruit was as firm as or firmer than conventionally grown fruit, at harvest and four months after harvest. No differences were evident in sweetness, as measured by the percent-soluble-solids content. Total per-hectare cultural and harvest costs were $7,785 for the organic system and $7,066 for the conventional system. Of the $719 difference, $105 was due to higher harvest costs associated with the higher yield and $482 was for voluntary third party certification and state mandated registration fees for the organically grown fruit.

Data on existing acreage and production of organic kiwifruit are scarce. Growers of kiwifruit were identified from California Certified Organic Farmers' *CCOF Membership Directory 2000–2001*. Because some growers listed only kiwifruit and others listed multiple crops, all growers listing multiple organic crops were contacted for separate acreage estimates for kiwifruit. A separate list identified nine handlers known to have packed organic kiwifruit during the 2000–01 crop year. Eight of those handlers provided an estimate of their total pack and the acreage of organic kiwifruit operated by their growers. Based on the data gathered,

Table 2.1. California Kiwifruit: Bearing Acres, Average Yields, Production, and Average Price, 1980–2001

Crop Year	Bearing Acres	Average Yield (tons/acre)	Total Production (tons)	Production Utilized (tons)	Grower Price ($ per ton)
1980	1,624	3.26	5,300	4,200	$2,400
1981	2,957	2.33	6,900	5,500	$2,000
1982	3,386	4.58	15,500	11,500	$920
1983	3,120	4.33	13,500	11,500	$1,240
1984	3,778	4.76	18,000	16,600	$1,070
1985	4,812	4.57	22,000	20,500	$813
1986	5,556	4.37	24,300	23,400	$1,030
1987	6,787	4.27	29,000	26,600	$710
1988	7,130	4.59	32,700	29,500	$760
1989	7,179	5.57	40,000	37,000	$400
1990	7,330	5.32	39,000	34,000	$415
1991	7,292	4.06	29,600	26,800	$820
1992	7,300	7.16	52,300	47,700	$290
1993	7,200	6.83	49,200	44,600	$370
1994	6,900	5.71	39,400	37,500	$491
1995	6,600	5.73	37,800	33,600	$459
1996	6,500	4.85	31,500	28,000	$470
1997	4,867*	7.19*	35,000	31,800	$518
1998	4,603*	7.95*	36,600	33,000	$744
1999	4,500*	6.00*	27,000	24,000	$634
2000	4,875*	6.97*	34,000	30,500	$455
2001	4,595*	5.60*	25,800	23,000	$667

Source: California Agricultural Statistics Service, *California Fruit & Nut Acreage*, annual issues. Bearing acreage and average yield from 1997 to 2001 (*) were calculated from information provided by CKC.

20 organic kiwifruit producers operate on 290.5 acres. This figure appears to represent nearly all of California's organic kiwifruit acreage. The California Department of Food and Agriculture (CDFA) reported 297 acres of registered organic kiwifruit in 2002.[11]

Each of the eight handlers was asked for observations on acreage and production trends for California organic kiwifruit. Only one of the handlers who also produce kiwifruit reported that his own production would be increasing as new plantings mature. None reported nonbearing vines or acreage in transition. One handler reported being in contact with a grower who was converting three to five acres of kiwifruit to organic.

Despite the stability reported for their own operations, all of the handlers expect production and sales of organic kiwifruit to increase in the future. Their expectations are based on higher yields anticipated from maturation of relatively new organic plantings, new plantings, conversions of conventional vineyards to organic, and increased imports of organic kiwifruit. One handler reported that a neighboring ranch with

[11] Personal communication from Ray Green, CDFA, August 6, 2002.

100 acres of kiwifruit was converting to organic production. Conversion of all 100 of those acres would increase California organic acreage by one third. The same handlers agreed that the increased availability of organic kiwifruit will place downward pressure on prices.

CKC issues kiwifruit industry shipment system (KISS) reports during the marketing year that include data on the total crop broken down by package and fruit size. Information is provided in the form of tray equivalents based on a minimum tray weight of seven pounds as the conversion factor. Beginning with the 2000–01 crop, CKC began issuing separate reports for the total crop and for the organic portion of it. These reports provide the first detailed estimates of California organic kiwifruit production and marketing practices. The KISS summary for the 2000–01 crop year reported a total estimated marketable crop of 7,493,293 tray equivalents, of which 397,723 were organic. Thus, organic kiwifruit accounted for 5.3 percent of the year's total marketable production. Production for 2001–02 dropped to 5,834,847 tray equivalents, of which 353,806 were organic. With the smaller overall crop, the organic share of production increased slightly to almost 6.1 percent.

Consumption and Demand

Total and per capita U.S. consumption of kiwifruit has grown substantially since 1985, when 33.4 million pounds (0.14 pounds per capita) were consumed. Total U.S. consumption grew almost fivefold by 2001, reaching 166.4 million pounds, a per capita consumption of 0.56 pounds. Imports of 112 million pounds accounted for about 67 percent of that total. Hanawa et al. estimated an annual price elasticity of demand (−2.542) but they were unable to obtain a satisfactory estimate of the income elasticity of demand because of the high correlation between variables, including price, income, and per capita consumption.

Organic kiwifruit have typically commanded a premium market price, but the premium has decreased over time as production and imports have increased. The organic kiwifruit handlers in this study reported the organic premium to be 15 to 50 percent, depending on the style of pack, fruit quality, and time of year. Single layer flats of U.S. No. 1 grade organic kiwifruit tend to have the highest price per pound. The most often mentioned premiums were between 20 and 30 percent. Five of the eight handlers reported that organic kiwifruit prices tend to be more variable than prices for conventional kiwifruit. Two handlers reported that the price differential tends to increase as the season progresses and is greatest from February through March. Another handler reported that he tended to get the highest organic prices early in the season.

Despite the price premium, it is not unusual for organic kiwifruit to be sold as conventional at the conventional price. Five of the eight handlers reported that they have occasionally sold organic kiwifruit in the conventional market. This may be due to the seasonal price variability mentioned above or, in some cases, to market channel requirements. For example, one handler sells only his highest quality kiwifruit as organic and markets the remainder as conventional even though it meets organic standards. Another handler said that he turns to the conventional market when he considers the conventional price to be high enough.

Imports and Exports

Kiwifruit imports and exports are a significant factor in seasonal marketing and pricing patterns. A number of factors, in addition to seasonality of supply and demand, have interacted to determine U.S. kiwifruit imports and exports over time. Note in Figure 2.2 that three important trends are evident. First, total U.S. consumption of kiwifruit has increased significantly over time. Second, except for a pause during the 1991 through 1994 period, the role of imports in total U.S. consumption has increased over time. Kiwifruit imports have exceeded exports since 1985 and the U.S. continues to be a net importer of kiwifruit. Finally, U.S. exports of kiwifruit have decreased over time. The reduction in kiwifruit imports that occurred from 1991 through 1994 resulted from two actions initiated by the California kiwifruit industry. First, the federal marketing order's minimum quality standards became applicable to imports of fresh kiwifruit in 1990. This had no impact on imports from New Zealand, which already met the standards. It had a significant restrictive impact on imports from Europe in general (and

Figure 2.2. U.S. Kiwifruit: Production, Consumption, Exports, and Imports, 1985–2001

Source: USDA Economic Research Service, *Fruit and Tree Nuts Situation and Outlook Yearbook*, 2000.

Italy in particular) and an even greater impact on Chile, from which shipments of immature fruit were restricted. Then, following low prices during the 1990–91 season, CKC filed an anti-dumping petition against the New Zealand Kiwifruit Marketing Board. After finding in favor of the California industry, the U.S. International Trade Commission (USITC) required a cash or bond deposit of 98.6 percent of the shipment value for every tray of New Zealand kiwifruit imported into the U.S. for two seasons, beginning in May 1992. The deposit rate was reduced to 11 percent for the 1994–95 season and was removed in 2000. Beginning in 1992, Chile replaced New Zealand as the leading supplier of kiwifruit imports in the U.S.

No data describing the role of organic kiwifruit in exports and imports were available. Some organic handlers indicated that they had previously exported organic kiwifruit to several markets, including Canada and Japan, but that they were not able to compete with Italian production in European markets. Only two handlers reported organic exports during the 2000–01 marketing year, and the volumes made up less than 10 percent of their packs. Domestic organic kiwifruit compete with organic imports, and the competition is likely to increase given New Zealand's push to expand organic production and sales. California organic handlers complained of price pressure from increased quantities of New Zealand kiwifruit in the domestic market during November and December 2000.

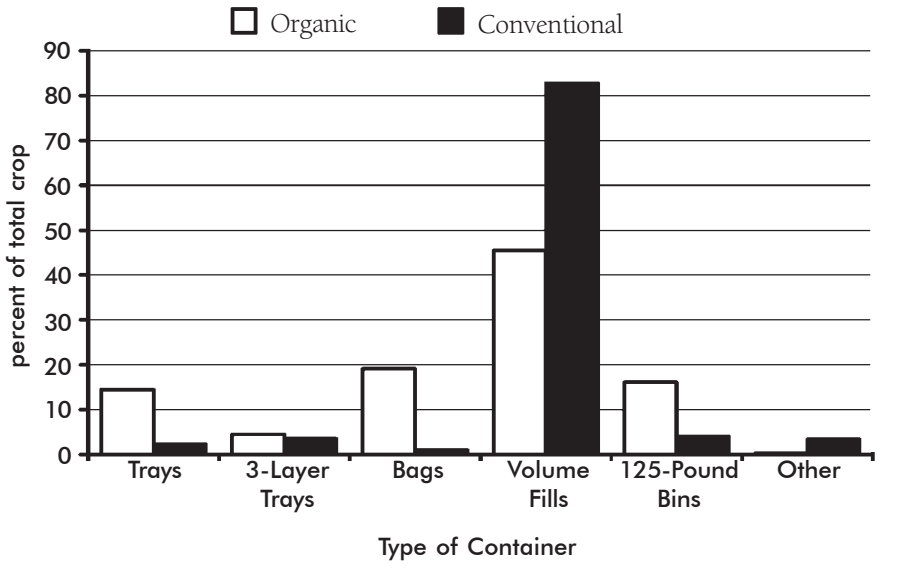
Reports from the USDA's Foreign Agricultural Service (FAS) indicate that both Chile and New Zealand will be expanding production and exports of organic kiwifruit. FAS did not have estimates of the amount of organic kiwifruit produced in Chile but did indicate that fresh organic kiwifruit production is expected to expand and that target markets are the U.S. and Japan. (USDA FAS 1998). Zespri International, the marketing agency for New Zealand kiwifruit, has been encouraging New Zealand growers to convert to organic production. New Zealand produced almost 4,900 metric tons of organic kiwifruit in 1999 (about 2.5 percent of the country's total production) and the organic share is projected to grow to 10 percent by 2005. Recently, New Zealand has been exporting more than half of its organic kiwifruit to Japan and shipping the remainder to Europe and the U.S. Prices for New Zealand's organic kiwifruit sold in Europe, Japan, and the U.S. have recently ranged from 8 to 15 percent above prices received for conventional fruit. The premium for imported organic kiwifruit has generally decreased as the organic share of total kiwifruit production has increased.

Marketing Patterns

Kiwifruit are picked when they are firm but not yet ripe. California kiwifruit can be harvested in September, but most of the fruit is picked from mid-October

through the end of November. The fruit must mature on the vine and reach a minimum soluble-solids requirement of 6.2 percent to 6.5 percent before being harvested to achieve ideal sweetness levels once they are ripe. Kiwifruit that remain on the vine longer, reaching a higher soluble-solids level, will taste sweeter when ripe and also tend to store better, making the fruit easier to handle and more appealing to consumers. The kiwifruit are placed in field bins that are delivered to packing facilities where the fruit is cooled and packed into various containers according to fruit size. The packed fruit is then placed in cold storage pending shipment. When the fruit is removed from storage to be shipped, it is checked and damaged fruits are replaced. When shipped early in the season, conventional kiwifruit may receive an ethylene treatment to assist ripening at the time of shipment. Organic kiwifruit cannot be treated.

Figure 2.3. Distribution of Organic and Conventional Kiwifruit Pack by Container, California Average for 2000–01 and 2001–02 Crop Years



Source: California Kiwifruit Commission, KISS reports, June 11, 2001, and April 30, 2002.

California kiwifruit are typically marketed during the eight-month period from October through May, and there is usually competition with Southern Hemisphere imports during April, May, October, and November when the marketing seasons overlap.

The monthly KISS reports include estimates of the volume of packed kiwifruit by container type that has

Table 2.2. A Comparison of Containers Used to Pack Organic and Conventional California Kiwifruit, 2000–01 and 2001–02 Crop Years

	2000–01		2001–02	
Container	Organic Trays	Conventional Trays	Organic Trays	Conventional Trays
Single-Layer Trays	65,147	192,290	44,755	110,110
3-Layer Trays	20,920	371,808	13,281	104,631
Bags	68,488	66,698	74,531	60,549
Volume Fills	176,311	5,908,481	164,560	4,798,162
125 Pound Bins	64,153	316,462	56,679	209,428
Other	2,665	239,830	0	198,160
Total	397,723	7,095,570	353,806	5,481,041

The minimum weight of a tray has been set at seven pounds, which is the conversion factor used by the industry to calculate the volume of kiwifruit in tray equivalents (TE).
Source: California Kiwifruit Commission, KISS report, June 11, 2001, and April 30, 2002.

been sold and remains in storage. Common shipping containers include single-layer trays (the premium package), three-layer cartons, cartons with 21-pound film bags, 22-pound volume-fill cartons, and 125-pound bulk bins. The distribution of the kiwifruit pack by container type for 2000–01 and 2001–02 is shown in Figure 2.3 and Table 2.2. Volume-fill cartons are currently the most popular container, accounting for 85 percent of the estimated 2001–02 total crop. Single-layer trays accounted for just 2.65 percent of that crop, which represents a significant change from previous years. In 1987–88, for example, more than 80 percent of the crop was packed in single-layer trays and only about 8 percent was packed in volume-fill cartons. This change in shipping containers is due in part to differences in packing and container costs. Currently, the cost for volume-fill cartons is about 40 percent of the cost for single-layer trays. Also, increasing consumption has increased demand for containers holding more fruit.

There are significant differences in the sizes of containers in which conventional and organic kiwifruit are typically packed. Conventional kiwifruit handlers have recently packed 85 percent of their produce in volume-fill cartons but organic handlers have used volume fill for only about 44 percent. Organic handlers use a wider variety of packaging, with about 16 percent of their organic kiwifruit packed in single-layer trays, 17 percent in one-pound film bags, and 16 percent in 125-pound bins. The distribution of package types for organic kiwifruit is based on the more specialized nature of the market and the premium price.

The eight organic handlers interviewed were asked to identify their buyers and describe how their customer mixes differ from that of conventional kiwifruit handlers. While organic and conventional kiwifruit are sold to many of the same customers (large chains, specialty stores, institutional buyers, etc.), there are some important differences in their marketing outlets. The largest volume of organic kiwifruit is sold to organic wholesalers and distributors who service retailers that stock organic products. Some handlers have established relationships with small and mid-sized chains that tend to specialize in organic foods. One handler commented that "organic customers differ from conventional customers in that they order smaller quantities and often use a common distributor or buying office that provides the mix of organic produce that their individual stores require." Another commented that "the natural food and normal food stores that buy organic kiwifruit expect better quality." Three of the handlers said that they had on occasion sold organic kiwifruit to large chain buyers but none listed large national chains as their primary outlet.

Seasonal Shipment Patterns

As noted earlier, the California kiwifruit harvest begins in September, with significant shipments to retail markets beginning in early October. Sales typically proceed slowly during October and November because of competing fruit from Chile and New Zealand. Sales build through December, typically peak in January, remain high during February and March, and then decrease significantly in April and May. Though imported kiwifruit are typically present in the market throughout the year, significant shipments from the new crop in the Southern Hemisphere begin to arrive in April and May. There may be small shipments of domestic kiwifruit during June, July, and August, but an abundance of new-crop imports significantly weakens the price for older fruit. The actual pattern of shipments varies from year to year as a result of crop size, the pattern and volume of imports, and price trends.

Hanawa et al. found that monthly prices follow the reverse of the monthly marketing pattern—prices are high at the beginning of the marketing season and decrease as volume increases. Prices generally recover toward the end of the marketing season as volume decreases but seldom exceed the initial price. Hanawa et al. also examined alternative marketing patterns for the 1986–87 through 1994–95 period and, based on their assumptions, found that producers could increase total crop revenues by shifting sales toward the beginning of the season. That reallocation of seasonal sales generated peak sales in November and decreased sales thereafter. Average prices in their model increased in line with storage costs. This price pattern existed from 1992 to 1997, when New Zealand was under the U.S. Department of Commerce's anti-dumping order, which reduced competition early in the season, and Chile

was shipping immature fruit toward the end of the season. Now, seasonal patterns are less predictable. The dumping order has been lifted, allowing imports from New Zealand to resume, and Chile no longer ships early, immature fruit.

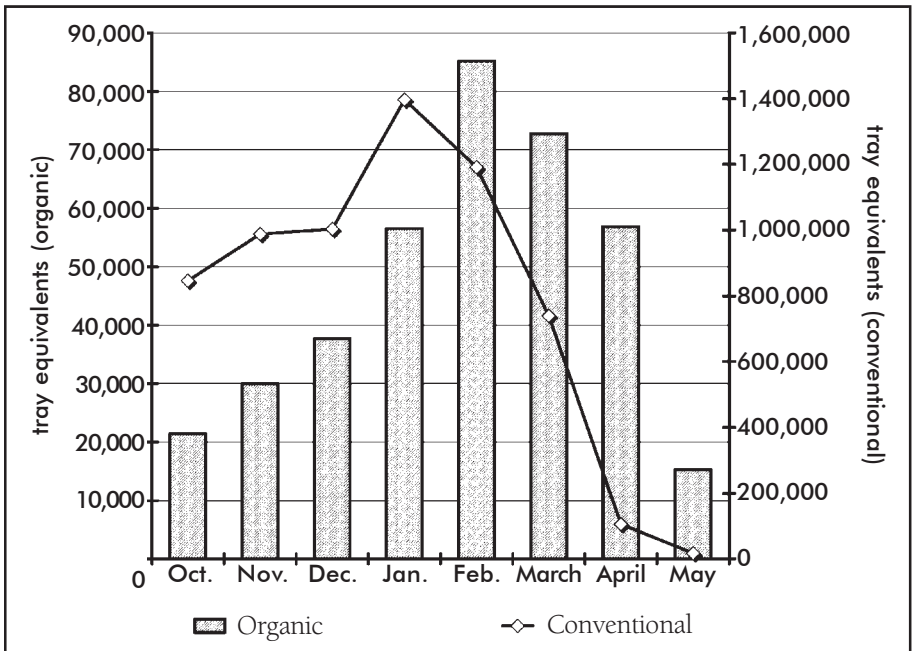
Average monthly shipments of organic and conventional kiwifruit for California's 2000–01 and 2001–02 crop years are shown in Figure 2.4 and Table 2.3. Organic kiwifruit were shipped later in the season than were conventional kiwifruit, a situation that is consistent with industry participants' descriptions of previous marketing patterns. An observed tendency to market organic kiwifruit later in the year was attributed to (1) less competition for organic fruit at the end of the marketing season when there are less imports, and (2) the greater storability of organic kiwifruit, which is typically picked later and at a higher sugar content than the bulk of conventional kiwifruit. The difference in shipping during the 2000–01 crop year may be due in part to market conditions during the first three months of that season. Handlers interviewed in November and December 2001 expressed concern about the large quantity of New Zealand kiwifruit still in the market and the effects of late imports on prices. Based on the shipment data, it appears that organic handlers delayed sales more than conventional handlers did while waiting for market conditions to improve.

Table 2.3. A Comparison of Monthly Sales for Organic and Conventional Kiwifruit, California, 2000–01 and 2001–02 Crop Years

	2000–01		2001–02	
Container	Organic Trays	Conventional Trays	Organic Trays	Conventional Trays
October	19,664	1,041,222	23,193	652,218
November	20,876	1,029,587	39,083	946,469
December	35,477	982,297	39,919	1,024,248
January	53,956	1,545,354	59,084	1,249,387
February	110,819	1,557,051	59,584	824,959
March	85,801	819,788	59,753	659,255
April	57,742	119,045	55,965	92,081
May	13,388	1,226	17,225	32,424
Total	397,723	7,095,570	353,806	5,481,041

Source: California Kiwifruit Commission, KISS reports, June 11, 2001, and April 30, 2002.

Figure 2.4. A Comparison of Average Monthly Sales for Organic and Conventional Kiwifruit, California, 2000–01 and 2001–02 Crop Years



Source: California Kiwifruit Commission, KISS reports, June 11, 2001, and April 30, 2002

Grade Standards

KAC's 2000–01 packing regulations set mandatory minimum grade, size, and maturity standards for all varieties of kiwifruit grown in California, with inspection to

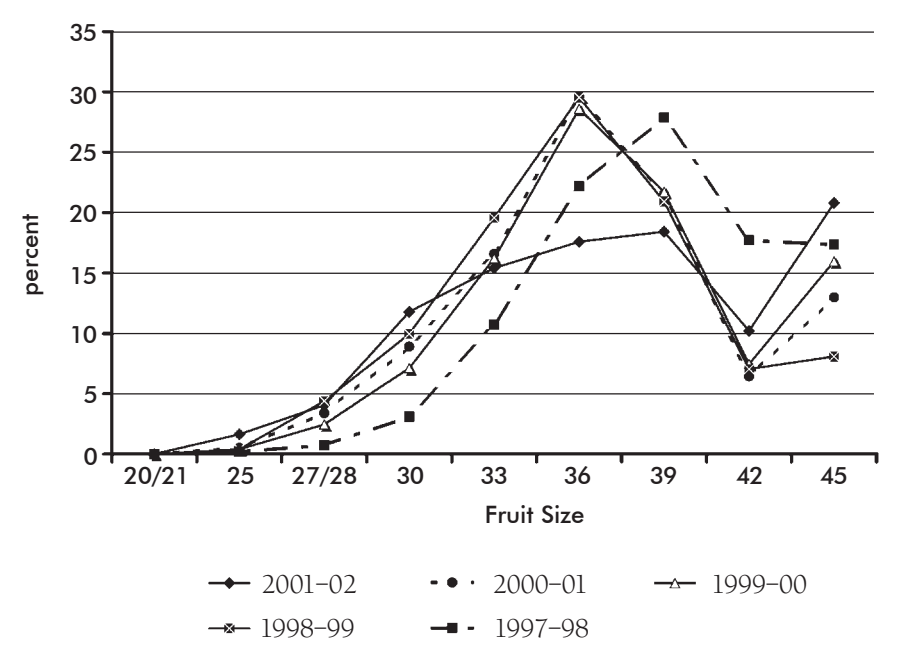
be done by either the federal or federal-state inspection service. The minimum grade for fresh shipments of kiwifruit is KAC No. 1 quality; the minimum size is 45, which is defined as a maximum of 55 pieces of fruit in an eight-pound sample; and the maturity standard specifies a minimum 6.2 percent soluble-solids content at the time of inspection. The regulations also specify pack requirements, container marking regulations, inspection and certification requirements, exemptions, assessments, inspection fees, and reporting requirements.

There was some controversy over the mandatory grade standards when they first became effective. Freida Caplan, who was instrumental in developing the U.S. market for kiwifruit, was very critical of the names assigned to the grades.[12] Handlers who had developed an outlet for kiwifruit shaped like "fans" were unhappy that those fruit could no longer be shipped since they did not meet the grade standards for shape. The initial grade designations were revised, and accumulating evidence suggests that minimum grade standards have been effective in increasing demand for California kiwifruit. KAC, in its most recently issued marketing policy statement, discusses improvements in quality over time associated with the use of mandatory minimum quality standards. The statement points to trade surveys of U.S. retailers conducted in 1993–1994 and 1995–96. The surveys indicate a high level of satisfaction with the quality of California kiwifruit and discuss increases in kiwifruit sales in Eastern Canada associated with improved quality for Italian imports. Ferguson and Carman (1999) empirically examined the effects of minimum maturity standards on the average price differential between kiwifruit from California and New Zealand. In their analysis of terminal market price data, they found that the early season price premium that New Zealand fruit enjoyed over California fruit decreased significantly in eight out of 20 cases in terminal markets in Boston, Los Angeles, and Philadelphia after minimum maturity standards were imposed for California kiwifruit. Their results are consistent with the proposition that the standards corrected a problem of asymmetric information on the sweetness of California kiwifruit in those markets, resulting in increased prices to California producers.

Size Distribution

The degree to which the federal marketing order's minimum grade and size requirements are equitable is sometimes questioned, particularly since cultural methods and production conditions can impact the shape and size distribution of fruit. An important question for this study was whether minimum grade and size

Figure 2.5. All Kiwifruit Distribution by Size, California, 1997–98 through 2001–02



Source: California Kiwifruit Commission, KISS report, annual issues.

[12] From a speech by Freida Caplan to the Joint Annual Meeting of the Kiwifruit Growers of California, the California Kiwifruit Commission, and the Kiwifruit Administrative Committee, Sacramento, CA, January 18, 1986.

standards impact organic and conventional kiwifruit equally. Comparing the size distribution of organic and conventional kiwifruit for the most recent crop provides a partial answer (partial because no data were available on the amount of kiwifruit culled for not meeting grade and size standards).

The quantity of organic and conventional kiwifruit in each size category and the percentage distributions by size are shown in Table 2.4 and Figure 2.5. The column for fruit size in Table 2.4 refers to the number of kiwifruit required to fill a standard single-layer tray. For example, size 25 refers to 25 fruit to a tray and size 45 to 45 fruit to a tray. Therefore, size 25 is larger than size 45 because it takes fewer fruit to fill the same size tray. As previously noted, the minimum weight of a tray has been set at seven pounds, which is the conversion factor used by the industry to calculate the volume of kiwifruit in tray equivalents. Careful comparisons of the percentage size distributions show that for the most recent crop year conventional kiwifruit tended to be larger on average than organic kiwifruit. Looking at cumulative percentages for 2000–01, only 2.8 percent of organic kiwifruit were size 30 or larger, while 12.86 percent of conventional kiwifruit were size 30 or larger. At the other end of the scale, 52 percent of organic and 41 percent of conventional kiwifruit were size 39 and smaller. In 2001–02, 5.8 percent of organic and 19 percent of conventional kiwifruit were size 30 or larger. That same year, 60.4 percent of organic and 48 percent of conventional kiwifruit were size 39 and smaller. The two-year average cumulative size distributions for organic and conventional kiwifruit are shown in Figure 2.6. The two-year average distribution by size is shown in Figure 2.7. The smaller average size for organic kiwifruit that is evident in both years is consistent with conventional wisdom in the industry.

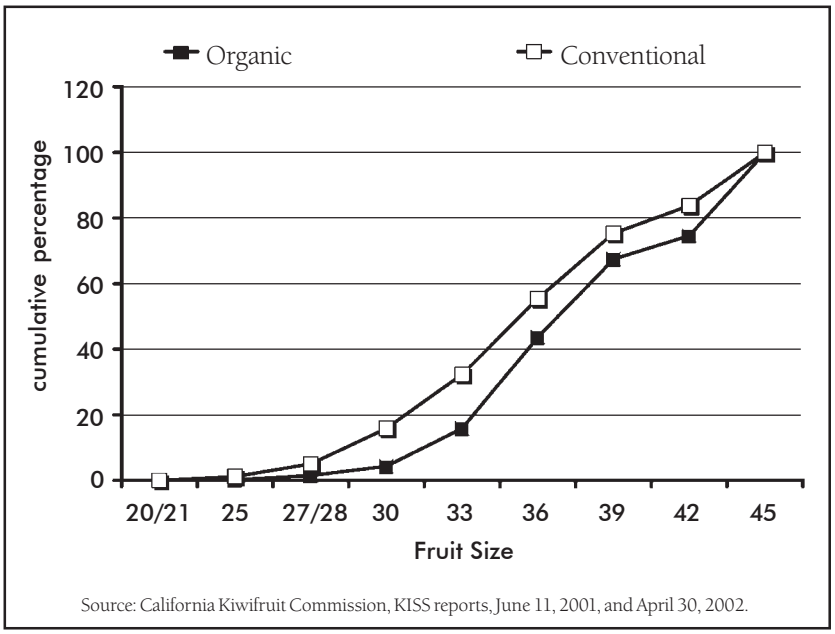
Organic handlers were asked if they had alternative markets for lower grade and substandard kiwifruit. A variety of responses indicated that there is not much of a market for culls. The handler that sells only U.S. No. 1 grade organic kiwifruit sells lower grade fruit to conventional markets. Two of the handlers sell lower grade fruit at roadside stands or farmers markets. Five of the handlers dispose of the culls (throw them away, put them back in the field, or dump them) and one has an outlet that uses the culls for juice concentrate.

Table 2.4. Distribution by Size of California Organic and Conventional Kiwifruit, 2000–01 and 2001–02

	2000–01		2001–02	
Fruit Size	Organic Fruit Trays	Conventional Fruit Trays	Organic Fruit Trays	Conventional Fruit Trays
20 or 21	0	0	0	489
25	1,104	36,680	663	101,658
27 or 28	3782	241,702	6,095	239,474
30	6,255	633,484	13,892	701,455
33	54,778	1,177,297	33,410	886,656
36	123,950	2,100,655	85,951	918,147
39	103,265	1,526,639	76,346	988,400
42	23,946	457,314	28,965	574,642
45	80,643	921,799	108,483	1,070,219
Total	397,723	7,095,570	353,805	5,481,041

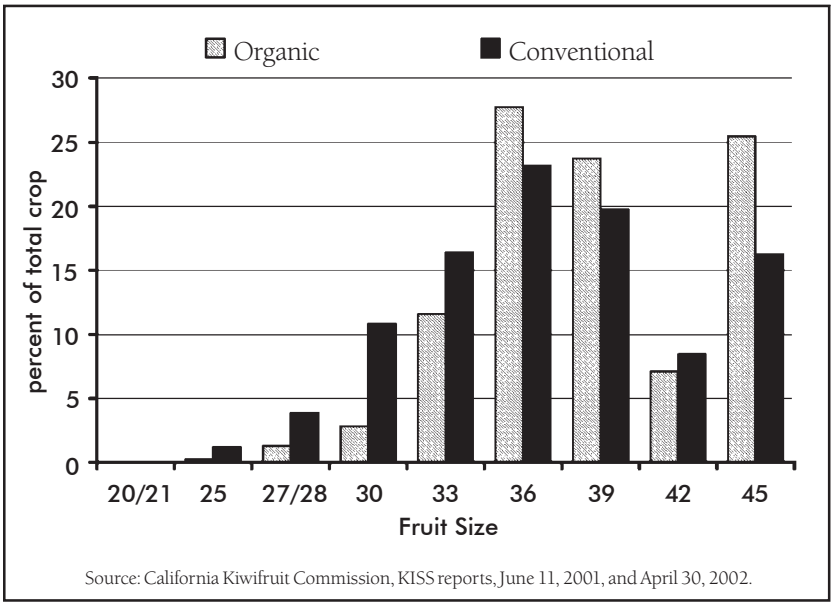
The minimum weight of a tray has been set at seven pounds, which is the conversion factor used by the industry to calculate the volume of kiwifruit in tray equivalents (TE).
Source: California Kiwifruit Commission, KISS reports, June 11, 2001, and April 30, 2002.

Figure 2.6. Cumulative Distribution of Organic and Conventional Kiwifruit by Size, California Average of 2000–01 and 2001–02 Crop Years



Source: California Kiwifruit Commission, KISS reports, June 11, 2001, and April 30, 2002.

Figure 2.7. Average Kiwifruit Distribution by Size, California, 2000–01 and 2001–02 Crop Years



Source: California Kiwifruit Commission, KISS reports, June 11, 2001, and April 30, 2002.

Organic Handler/Producer Views on the Marketing Order

Organic kiwifruit handlers were asked for their views on the federal kiwifruit marketing order's provisions, which mainly regulate and enforce mandatory minimum quality standards for grade, size, and maturity. Organic and conventional kiwifruit must satisfy the same standards. As noted above, the size distribution for organic kiwifruit is smaller than conventional kiwifruit, which can pose grading problems for organic handlers and producers.

Handlers expressed a variety of opinions on the value of minimum quality standards for organic kiwifruit. Two of the smallest producer/handlers, who market only their own fruit, said that the minimum size requirement tended to result in more culls for organic than for conventional fruit. One, however, added that the economic impact was minimal because organic consumers would not buy the small-cull fruit anyway. Four of the eight handlers were very positive about and supportive of existing quality standards. They stated that the quality standards help them sell their organic kiwifruit by helping to maintain consistent quality and by giving buyers confidence in the product. These four handlers also believe that current standards are fair. Another handler criticized the maturity standard as setting the sugar level too low (the average minimum maturity of 6.5 percent soluble solids was reduced to 6.2 percent for the 2000–01 season).

The organic kiwifruit handlers interviewed expressed great concern about the quality of their pack. One handler described "the market evolution for organic kiwifruit as beginning with customers who were most concerned about farming practices. As consumers became acquainted with organic kiwifruit, they came to appreciate the taste but were not too concerned with appearance." Now, his customers want fruit that tastes good and also is free from blemishes. Another handler commented that "given a choice, customers prefer and

are willing to pay for less cosmetically challenged fruit." Several handlers indicated that organic consumers are a quality-conscious and premium market segment that demands higher quality than conventional buyers. Statements such as "my consumers set the standards, which are above the minimum standards" were common. As previously noted, one handler markets only his U.S. No. 1 organic kiwifruit as organic; the rest is sold as conventional.

Organic Handler Views on CKC

While the programs administered by CKC and KAC are separate, most producers and handlers tend to think of them as one. This is not surprising given that the two programs are combined for administrative purposes, collect a combined assessment, and are operated out of the same office. Handlers were asked if CKC's advertising and promotion programs help them market organic kiwifruit and if the handlers do any advertising of their own. All but one of the handlers said that the present CKC advertising and promotion program does not help market organic kiwifruit. One handler commented that past CKC advertising and promotion had helped market both organic and conventional kiwifruit, but with smaller budgets and reduced efforts, the present impact is small. He also commented that CKC does a very good job with a limited budget. Another commented that CKC's programs are oriented to conventional kiwifruit, do not help market organic kiwifruit, and are a waste of time and money.

Four of the eight handlers interviewed spend a moderate amount of their own money advertising their organic kiwifruit. All of the expenditures are for industry publications (organic directories, *The Packer*) directed toward the trade to inform wholesalers and other buyers about the availability of organic kiwifruit. None advertises to consumers.

Suggested Marketing Program Improvements

When organic kiwifruit handlers were asked about improvements they would like to see in the CKC and KAC programs, they offered the following responses.

- All California kiwifruit is at a disadvantage against imports because USDA does not have the courage to make foreign suppliers adhere to our quality criteria.
- Advertising and promotion should stress the need to buy only California-grown fruit.
- Reducing costs to growers would be an improvement.
- It would be nice if the commission could have more money but this is unrealistic.
- There should be programs specific to organic kiwifruit, such as point-of-purchase materials and Web site items.
- It is good for the industry to have as much data and information as possible on organic developments (KISS reports plus actual and projected acreage and production).
- CKC could put an organic section on its Web site.
- People in the Midwest do not seem to be aware of organic products. I would like to have an advertising program to show people the advantages.
- I would like to see some organic advertising and point-of-sale materials.
- Need to promote organic fruit.
- A good way to advertise organic fruit is with the PLU sticker. CKC designed a sticker for conventional fruit but not for organic.
- A different grade designation for organic would be interesting.
- There should be different standards for organic.
- Sugar levels are too low. There should be a higher minimum maturity standard.

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APPENDIX 2

Data and Information Sources

Information and data on both organic and conventional kiwifruit are assembled and presented with comparisons where appropriate. Questions of equitable treatment of organic and conventional kiwifruit by the marketing order are addressed where possible. However, because organic production is relatively new, information on production and marketing of organic kiwifruit is limited. Statistics on California kiwifruit acreage, production, and prices are available from CASS, and CKC publishes KISS (kiwifruit industry shipment system) reports during the marketing season. The KISS reports, which contain data on estimated crop volume and distribution of fruit by size and package, began to include data on organic production and marketing with the 2000 crop year. The published data were supplemented by interviews with organic kiwifruit handlers. Eight of the nine handlers who pack organic kiwifruit were interviewed. Cooperating handlers were asked about the size of their operations, their marketing practices, their views on the impact of the marketing order for kiwifruit, and if there were changes that they would like to see made in the marketing order.

Development of California's Kiwifruit Industry

California kiwifruit production is a comparatively recent development, with commercial quantities of the crop available only since the early 1970s.[13] Originally known as the Chinese gooseberry, kiwifruit is a deciduous vine crop native to China's Yangtze Valley. It was introduced to New Zealand in 1906 as the Chinese gooseberry and when commercial exports began in 1953 it was renamed "kiwi" because of the fruit's superficial resemblance to New Zealand's native bird. In 1974, kiwifruit became the internationally accepted name.

California's original kiwifruit plants were received at the U.S. Plant Introduction Station at Chico, California, from a New Zealand grower in 1935. It took until the 1960s for the station to develop cultural methods and encourage growers to experiment with new plantings. California's acreage of the crop remained small until New Zealand exporters working with Freida's Finest, a Los Angeles based specialty crop wholesaler, successfully established a premium priced market for kiwifruit in the U.S. during the 1960s. Two growers imported plants from New Zealand in the mid-1960s to establish the first kiwifruit vineyards in California. Nursery production of kiwifruit began in the Chico area during the 1960s and California plantings totaled about 75 acres by 1970. Two factors—very high projected per-acre income[14] and favorable income tax treatment for development expenses—combined to encourage rapid expansion of kiwifruit plantings during the 1970s and early 1980s.

Published data on development of the California kiwifruit industry are limited for years prior to 1980, when CKC was established. CASS published bearing and nonbearing acreage data for 1974 through 1992. Their estimates of annual plantings that were standing in a given year permit estimates of plantings from 1970 through 1992. A consistent series of annual production and grower returns is available beginning in 1980. Note that nonbearing acreage estimates are not available after 1992. It is likely, however, that nonbearing acreage has remained low since then due to relatively low prices for kiwifruit. Going back to the first reported acreage data, CASS recorded 405 acres of kiwifruit in 1974, consisting of 56 acres bearing and 349 acres nonbearing. Relatively numerous new plantings through 1982 led to increases in nonbearing and total acreage. Most of the early individual plantings were on a very small scale by California standards, ranging from one to five acres. As growers gained experience with the new crop, the acreage and size of new plantings expanded. Then, as the new plantings began to produce, there was a sustained increase in bearing acreage that extended through 1988. Total kiwifruit

[13] The development sequence for kiwifruit is described by Beutel et al. (1976).

[14] One article, for example, described expected yields and prices during the early 1970s: "Conservative estimates for crop yield are 6,000 pounds per acre in the fourth year to 32,000 pounds per acre in the eighth year. Current wholesale prices average about $1 per pound with retail prices set accordingly." (*Western Fruit Grower*, March 1973).

acreage peaked at 7,851 acres in 1988, and bearing acreage peaked at 7,330 acres in 1990. With limited planting and increased removals, bearing acreage decreased to 5,300 acres in 1998.

Even though California kiwifruit was produced and marketed through the 1970s, CASS first reported production and price data in 1980. Initially, there were 4,200 tons utilized from a total crop of 5,300 tons, resulting in an average grower price of $1.20 per pound (Figure 2.A1). Based on press reports and promotional literature, grower returns of $1.00 per pound for kiwifruit were the norm through the 1970s. Favorable returns persisted, with a 1981 average price of $1.00 per pound. This was the last year that producer returns were $1.00 per pound or more. A sharp increase in production in 1982 reduced average grower prices to $0.46 per pound. Since then, grower prices have ranged from a high of $0.62 per pound in 1983 to a low of $0.145 per pound with record high production in 1992. Grower returns have improved since 1992, as both acreage and production have decreased. There is generally an inverse relationship between kiwifruit production and average price, as shown in Figure 2.A1.

Total annual kiwifruit production is larger than utilized production, as shown in Figure 2.A1, since a portion of the fruit is culled in the packing process. As the industry was developing, culls had limited use and most were wasted. Recently, cull purchases by juice concentrate makers have provided limited returns to growers.

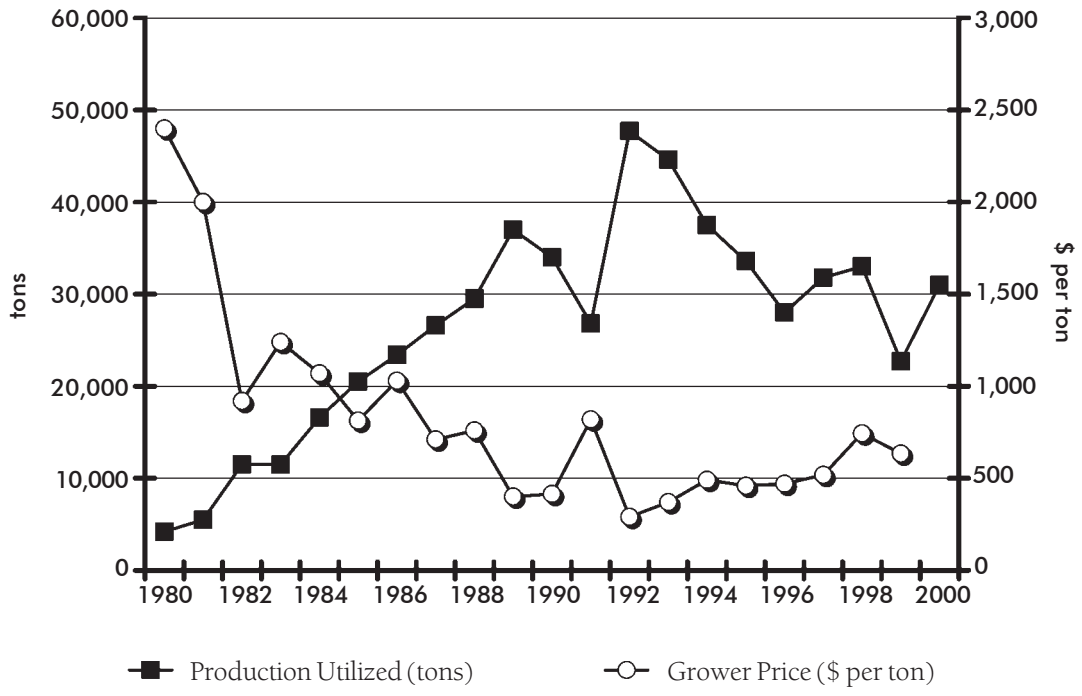
The percentage of total production that is utilized has tended to increase over time. During the four-year period from 1980 through 1983, slightly less than 80 percent of the crop was utilized, but this increased to more than 90 percent in 1984 and has averaged about 91 percent for the 16-year period from 1984 through 1999.

Average yields have also varied and increased over time, but they continue to be well below the double-digit figures touted by some early industry promoters. Per-acre average industry yields have ranged from a low of 2.33 tons per acre in 1981 to a high of 7.16 tons per acre in 1992. Average yields topped five tons per acre for the first time in 1989 and after that averaged 5.87 tons per acre through 1998. Recent average yields of 6.6 tons per acre in 1997 and 6.9 tons per acre in 1998 are near the top of Beutel et al.'s predicted yield range of four to seven tons per acre for full-bearing, ten-year-old kiwifruit vineyards (1976).

Kiwifruit acreage has been rather widely distributed throughout California, with CASS reporting 7,117 acres in 1992 that were located in 36 of California's 58 counties. The 1992 Agricultural Census reported that 699 farms had 7,164 acres of kiwifruit, an average of 10.25 acres per farm. The total acreage decreases shown in Figure 2.A1 appear to have been concentrated in the smallest kiwifruit farms. The 1997 Agricultural Census reported 5,854 acres distributed among 449 farms, an average of 13.03 acres per farm. The 250 farms that exited kiwifruit production between 1992 and 1997, therefore, were small, averaging 5.24 acres per farm.

A comparison of CASS and census data shows that kiwifruit acreage became more geographically concentrated as it decreased. According to the 1997 census, kiwifruit acreage was concentrated in the northern Sacramento Valley (Butte, Sutter, and Yuba Counties had 35.5 percent of total acreage) and the southern San Joaquin Valley (Fresno, Tulare, Kern, and Kings Counties had 52.9 percent of total acreage). Tulare County accounted for 1,533 acres and Butte County for 1,475 acres, 51.4 percent of the total. The limited data available on the size distribution of kiwifruit farms show that most operations have less than 15 acres and many have less than 5. The largest operations were in Kings County and Kern County, where plantings averaged 72 and 48 acres per farm respectively. Average farm sizes for other major producing counties were: Butte, 13 acres; Sutter, 8 acres; Yuba, 15 acres; Fresno, 12 acres; and Tulare, 22 acres.

Figure 2.A1. California Kiwifruit Production and Average Prices, 1980–2000



Source: California Agricultural Statistics Service, *California Fruit & Nut Acreage*, annual issues.

3. CASE STUDY: NORTHWEST ORGANIC WINTER PEARS

Growers and handlers of fresh winter pears (including Anjou, Bosc, and other varieties) established a federal marketing order in 1939, just two years after the Agricultural Marketing Agreement Act (AMAA) was passed. The order was last amended under formal rulemaking on November 14, 1997. The Winter Pear Control Committee (WPCC), which administers the marketing order, is comprised of 12 members (half are growers and half are shippers) who are elected from the four pear-growing districts.

Originally, the order included all growers and shippers of fresh winter pears in California, Oregon, and Washington. In October 1997, however, California, which produces few winter pears, withdrew from the marketing order. Thus, the order now includes only northwest winter pears. WPCC contracts its consumer research and advertising activities to Pear Bureau Northwest (PBN).

Another federal order, the Northwest Fresh Bartlett Pear Marketing Order, regulates Bartlett pears grown in Oregon and Washington. In addition, a state marketing order (the Oregon Bartlett Pear Commission) regulates Bartlett pears grown in Oregon.

Data and Information Sources

Information on conventional pears (acreage, production, and prices) is available from the National Agricultural Statistics Service (NASS). In addition, WPCC publishes annual statistics on conventional winter pears. PBN provided data on organic pears that were shipped in 2001–02 and estimates for 2002–03. Three reports from Granatstein (Granatstein 2000a, Granatstein 2000b, and Granatstein and Kirby 2002) provide recent international, national, and state data on organic pears (acreage, production, and prices) and details on Washington organic pears.

Fifteen organic winter pear handlers were identified, and phone interviews were conducted with nine of them during July, August, and September 2002. Handlers were asked about the size of their operations, their marketing practices, their views on the impact of the marketing order for winter pears, and changes they would like to see made in the marketing order.

Production

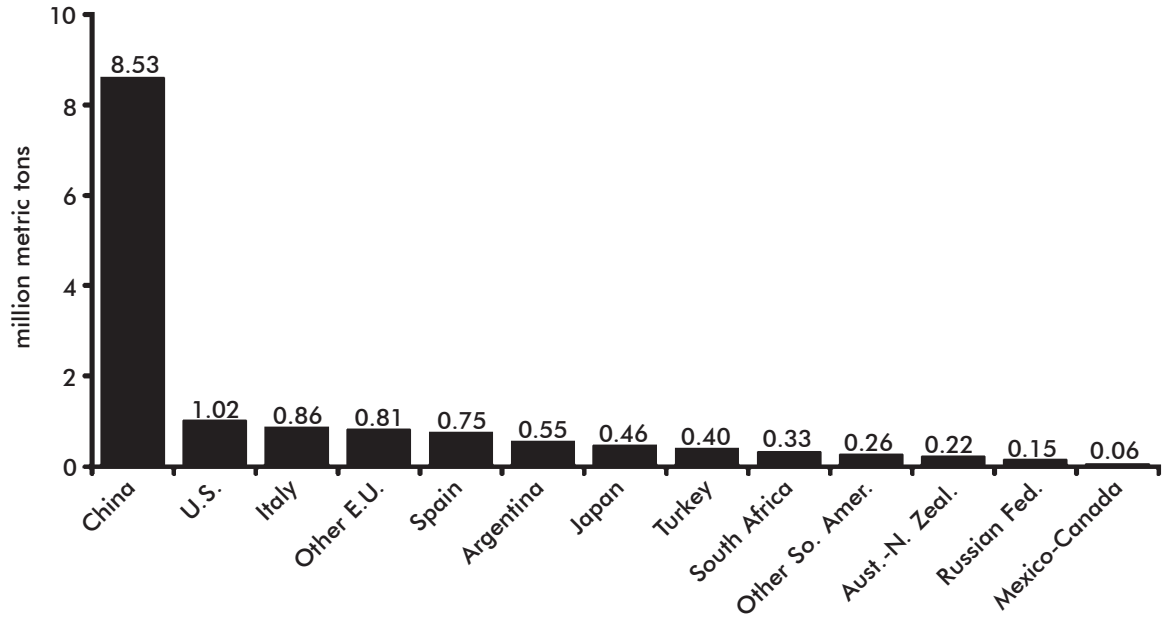
Fourteen million tons of pears were produced worldwide in 2000. China is the world's largest pear producing country; its 8.5 million tons represent almost 60 percent of total global production (Figure 3.1). The other pear producing countries lag far behind at less than 10 percent of global production each. For many years, Italy was the second largest producer, followed closely by the U.S. In 2000, the U.S. finally surpassed Italy, producing 7 percent of world supply compared to Italy's 6 percent. Spain and Argentina are, respectively, the fourth and fifth largest pear producers at 5 percent and 4 percent. Because data are not available for all countries, worldwide acreages are not presented in this report.

U.S. Pear Production

European colonists brought pears to North America, and large orchards were established throughout the United States, especially in New England. However, fire blight, a European bacterial disease of apples and pears that kills blossoms, shoots, limbs, and sometimes entire trees, destroyed many orchards. U.S. commercial pear production was then relocated from the humid South and East to drier areas of the Pacific Northwest where fire blight is less prevalent. Today, conventional pears are grown commercially in nine states (Washington, California, Oregon, New York, Minnesota, Pennsylvania, Connecticut, Colorado, and Utah in decreasing rank). However, three states, Washington, California, and Oregon, predominate both the conventional and the organic pear industries; collectively, they produce more than 95 percent of the U.S. crop.

The U.S. commercially grows primarily European varieties: summer pears (mainly Bartlett), fall pears (such as Hardy), and winter pears, predominantly Beurre d'Anjou (Anjou) and Beurre Bosc (Bosc) plus Winter Nelis, Doyenne du Comice (Comice), Forelle, Seckle, and red varieties of winter pears. Asian pears are relatively new in the U.S. and represent only a small portion of total production. About three-quarters of

Figure 3.1. Pear Production in Selected Countries (million tons) in 2000–01



Source: *Northern Hemisphere Pear Situation and Outlook*, USDA Agricultural Marketing Service.

U.S. Bartlett pears are canned while almost all winter pears are sold on the fresh market.

Bartlett pears made up 52 percent of the total U.S. crop for 2001–02, a slight decrease compared to past years (*World Horticultural Trade and Export Opportunities*, November 2001). In 2001, production of Bartlett pears totaled 507,000 tons (USDA NASS).

U.S. Winter Pear Production

Between 70 and 75 percent of non-Bartlett pears produced in the U.S. are winter pears. Therefore, although data are not kept specifically on winter pear acreages and yields nationwide, data for non-Bartlett pears represent mostly winter pears and therefore winter pear trends.

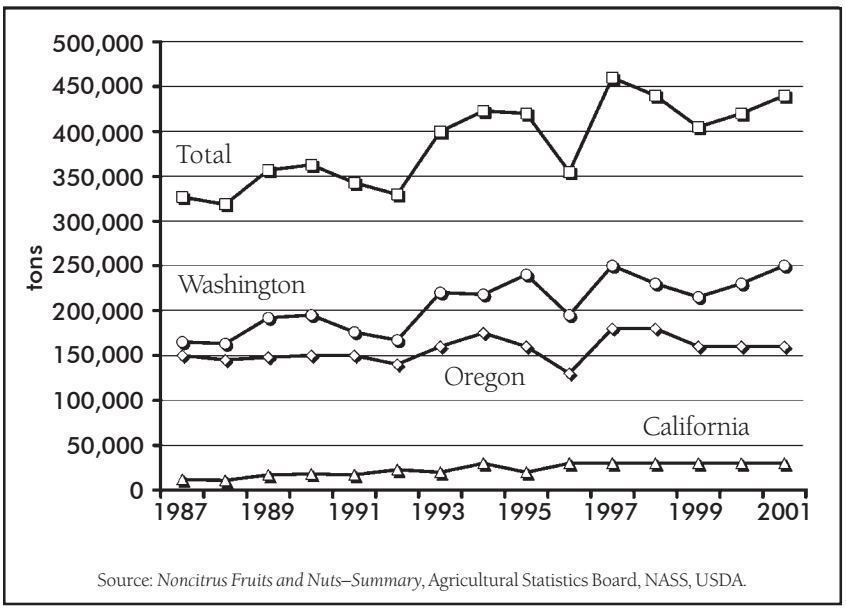
The bearing acreage of non-Bartlett pears in the U.S. increased steadily between 1987 (22,500 acres) and 1996 (29,800 acres). Washington, Oregon, and particularly California contributed to this increase. California more than doubled its relatively small acreage, increasing from 1,400 to 4,400. Since 1996, the number of acres devoted to non-Bartlett pears has remained fairly stable. In 2001, 30,200 acres nationwide produced non-Bartlett pears. The vast majority of those acres, 25,900, were located in the northwest—13,500 acres in Washington and 12,400 acres in Oregon (USDA NASS).

Total non-Bartlett pear production in the U.S. in 2001 was 440,000 tons, of which Washington produced 57 percent, Oregon 36 percent, and California 7 percent. PBN reported that in 2001–02 winter pears represented about 83 percent of total pear production in Oregon and Washington (15,405,500 standard boxes[15]). Of those pears, Anjous made up 73 percent (11,209,000 boxes), followed by Boscs at 21 percent (3,161,000 boxes).

In the last two decades, the nation's five-year average production for non-Bartlett pears has increased slowly from about 341,800 tons (1987–91) to about 433,000 tons (1997–2001) with variations year to year (Figure 3.2). The absolute increase was greatest in Washington due to increases there in average yield per acre and some increase in acreage. Several problems

[15] Quantities of pears reported in "standard boxes" or "boxes" in this section refer to actual standard western pear boxes. This box weight range is from 42 to 48 pounds. Generally within the industry, a standard winter pear box is considered to contain 44 pounds.

Figure 3.2. Production of Non-Bartlett Pears by State, 1987–2001 (tons)



Source: *Noncitrus Fruits and Nuts–Summary*, Agricultural Statistics Board, NASS, USDA.

in the apple industry in recent years (the Alar incident, overproduction, etc.) encouraged many apple growers to switch to pear production.

Yields for non-Bartlett pears nationally have remained steady since 1987, about 13.8 tons per acre. Washington's yields are high (16.4 tons per acre) and have been increasing since 1987. In comparison, California's average yields are relatively low at 6.3 tons per acre. Anjous are the dominant variety in Oregon and Washington. California's non-Bartlett varieties in addition to Anjou include Bosc, Seckle, Comice, and red pears.

Northwest Winter Pear Production (Oregon and Washington)

In Oregon and Washington there are four areas where winter pears are grown commercially: Medford in Oregon; Wenatchee and Yakima, both in Washington; and the Mid-Columbia region (Hood River) in northern Oregon and southern Washington. These four districts have semi-arid conditions that are particularly beneficial for winter pear production. The Wenatchee and Mid-Columbia areas (especially the Hood River area in Oregon) produce approximately 80 percent of the northwest's winter pears.

There are approximately 70 handlers of winter pears in Oregon and Washington, none of which are large operations like their counterparts in other commodity industries. According to PBN, the largest individual shippers handle 6 to 8 percent of all pears (all varieties included).

There are 1,640 pear growers in Oregon and Washington and average acreage per grower is 25.5 (USDA NASS and PBN). In fact, none of the pear growers are large. Instead, there are many small farmers. Approximately 1,500 growers produce winter pears and 1,350 grow Bartletts; three-fourths of the growers produce both varieties.

Organic Production

Granatstein (2000b, 2002) reported organic pear acreages worldwide at 7,618 acres in 2001. No data were available for China. Europe, home to 60 percent of that acreage (3,665 acres) predominated (Table 3.1). The U.S. followed with 1,630 acres in 2000 and 2,798 acres in 2001. Granatstein (2000b) reported 920 acres of organic pears in Argentina in 2000, identifying it as another large producer of organic pears, but a GAIN report from USDA[16] put the estimate for Argentina in 1999 much lower—234 acres of certified organic pears.

Table 3.1. Estimated Worldwide Acreage of Certified Organic Pears, 2000 and 2001

Country	2000	Country	2001
E.U.	3,665	E.U.[1]	3,665
U.S.	1,630	U.S.	2,798
Argentina	920	South America	932
New Zealand	N/A	New Zealand	163
Canada	60	Canada	60
Total	**6,275**	**Total**	**7,618**

[1] Europe's data are from 2000(a). No data were available for China.
Sources: Granatstein 2000, Granatstein and Kirby 2002.

[16] FAS GAIN (Global Agriculture Information Network) Report, USDA, *Argentina Organic Products: Apples, Pears and Cherries, 2000*.

Argentina's production is expected to increase in response to a growing demand from Europe and the U.S., Argentina's two largest export markets.[17] The two estimates available for New Zealand organic pear acreage varied considerably: Granatstein (2002) reported 163 acres in 2001[18] and a Global Agriculture Information Network (GAIN) report from the U.S. Department of Agriculture (USDA) identified 500 acres in 2000.[19]

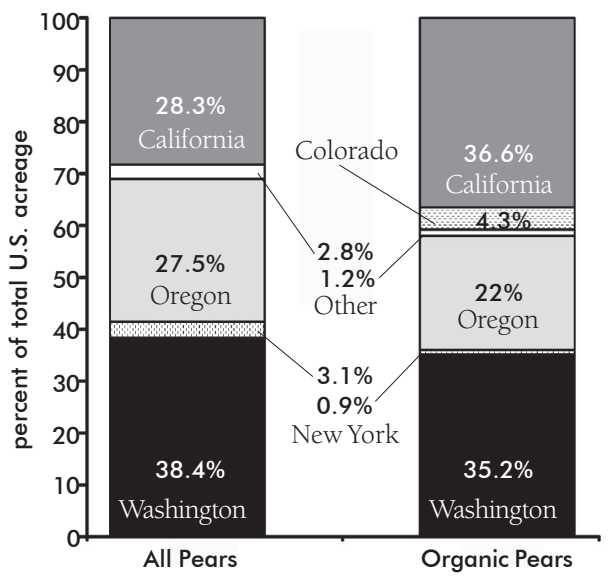
The data sets for conventional and organic production are not comparable because both production and acreage data are available for conventional pears but only acreage data are available for organics. Thus, comparing distribution by country for overall production and organic production is impossible. Also, acreage figures for pear production per country were not available, so the percentage of each country's acreage that is organic is unknown. However, it appears that the countries that are important players in organic pear production also have significant conventional operations.

Table 3.2. Estimated U.S. Certified Organic Pear Acreage – 1998, 2000, and 2001

	Number of Acres		
State	1998	2000	2001
Washington	449	619	1,308[1]
California	800	N/A	842
Oregon	500	500	NA[1]
Colorado	87	115	100
New York	–	–	20
Wisconsin	–	–	16
Texas	–	–	12

[1] Oregon's acreage was included in Washington's figure in 2001.
Sources: Granatstein, 2000a; Granatstein, 2000b; and Granatstein and Kirby, 2002.

Figure 3.3. Distribution of Acreage for All Pears and for Organic Pears in the U.S., 2001



Sources: *Noncitrus Fruits and Nuts 2001–Summary*, NASS, USDA, July 2002; *Current Trends in Organic Tree Fruit Production*, D. Granatstein and E. Kirby, May 2002.

U.S. Organic Production

Organic pear production was established fairly recently in the U.S., in the 1980s, and developed quickly during the 1990s. Organic acreage now represents about 4.3 percent (2,298 acres in 2001) of total U.S. pear plantings (Granatstein 2002).

The warm, dry climate of the West allows producers to grow organic fruit without major difficulty in controlling pests. Washington, Oregon, and California combined represent about 95 percent of the U.S.'s organic pear acreage, equivalent to their share of the pear market as a whole (Table 3.2). Washington grows the most organic pears in the nation, accounting for more than one-third of U.S. acreage (about 808 in 2001), and about 38 percent of overall pear acreage (Figure 3.3). California is second with 37 percent (842 acres) of total organic acres and 28 percent of domestic production in 2001. Oregon, by contrast, has 22 percent of the country's organic acres (assuming 500 acres in 2001) and 28 percent overall. Other states producing organic pears are Colorado, New York, Wisconsin, and Texas (148 acres collectively).

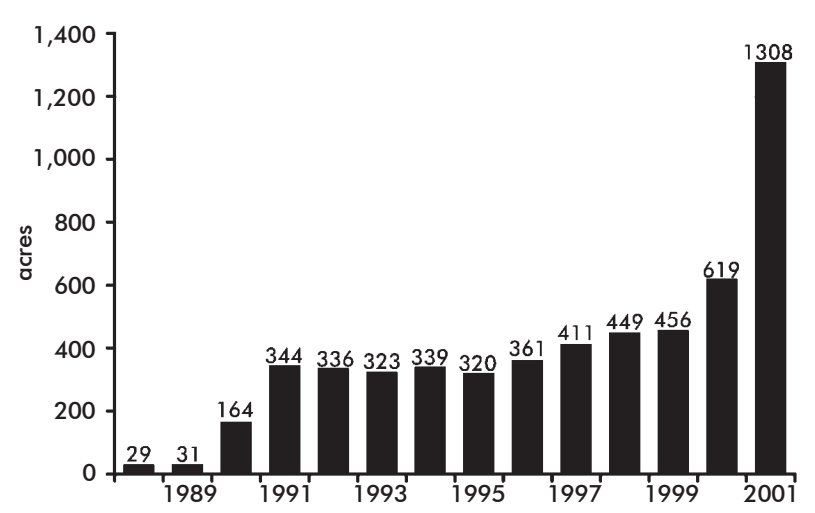
[17] *Organic Perspectives*, USDA FAS, March 2001.

[18] Gaete, P. Ceroni. *Estructura y Potential Exportador de la Industria Organica Chilena: Puntos Criticos para el Desarollo,* Agrupacion de Agricultura Organica de Chile A.G. – AAOCH Temuco, Enero 2002.

[19] USDA FAS GAIN (Global Agriculture Information Network) Report, *New Zealand Organic Products, Apple and Pears Organic Industry, 2000.*

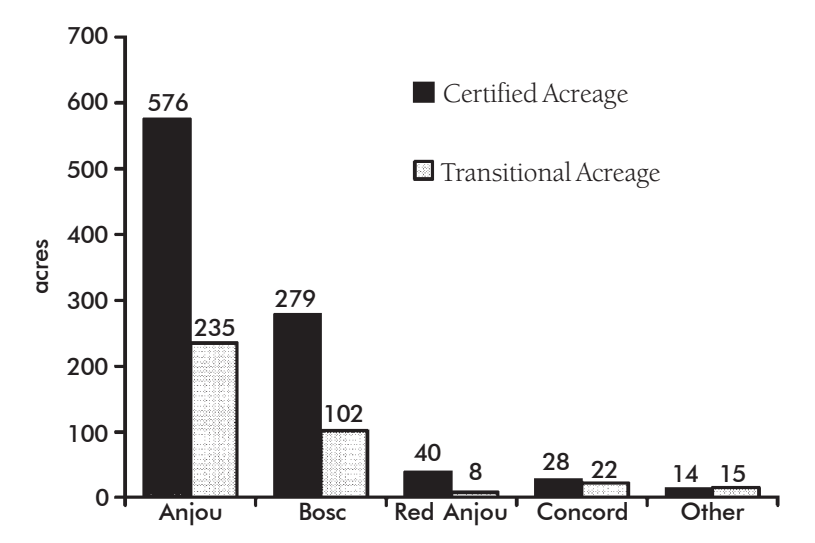
Information on the distribution of varieties for U.S. organic pear production is not available, but Granatstein (2002) presents specific information on Washington organic pear varieties that is discussed later.

Figure 3.4. Evolution of Organic Pear Acreage in Washington, 1988–2001



Source: *Current Trends in Organic Tree Fruit Production*, David Granatstein and Elizabeth Kirby, May 2002.

Figure 3.5. Organic Pear Acreage by Variety, 2001



Source: *Current Trends in Organic Tree Fruit Production*, David Granatstein and Elizabeth Kirby, May 2002.

Northwest Organic Winter Pear Production

In Washington, organic pear production got underway slowly at the end of the 1980s. A sudden shift to organic production in the apple sector after an Alar scare in the late 1980s does not appear to have affected the pear industry. Organic pear production in Washington increased slightly during the 1990s, and then more than doubled from 2000 to 2001, expanding from 619 to 1,319 acres (Figure 3.4). Some 382 of those acres were reported as organic transitional in 2001, so Washington's organic pear production will likely increase during the next few years. In contrast, conventional pear acreage in Washington remained relatively stable during the same period.

Granatstein (2002) reported detailed data on Washington organic pear acreage, including information on pear varieties. For 2001, he reported 937 acres of organic winter pears in Washington, of which 576 acres (61 percent) were Anjou and 279 acres (30 percent) were Bosc. Organic red Anjou, Concorde, and other varieties together accounted for 82 acres (9 percent)(Figure 3.5).

Fifteen of the 70 or so handlers of winter pears in Oregon and Washington ship organic pears (PBN). In the 1990s, PBN reported about 35 organic growers (28 to 30 in Washington and five or six in Oregon). A more recent count has not been made. The nine handlers interviewed reported between 72 and 78 producers of organic winter pears. This figure is an overestimate, however, if some organic growers shipped their pears to more than one handler. Taking into account the fact that six handlers did not answer the survey, it seems that 80 is a good estimate of the number of organic pear growers in the northwest region.

The first estimate of organic winter pear production in the northwest was reported in *Good Fruit Grower* magazine in July 1998, at which time production was

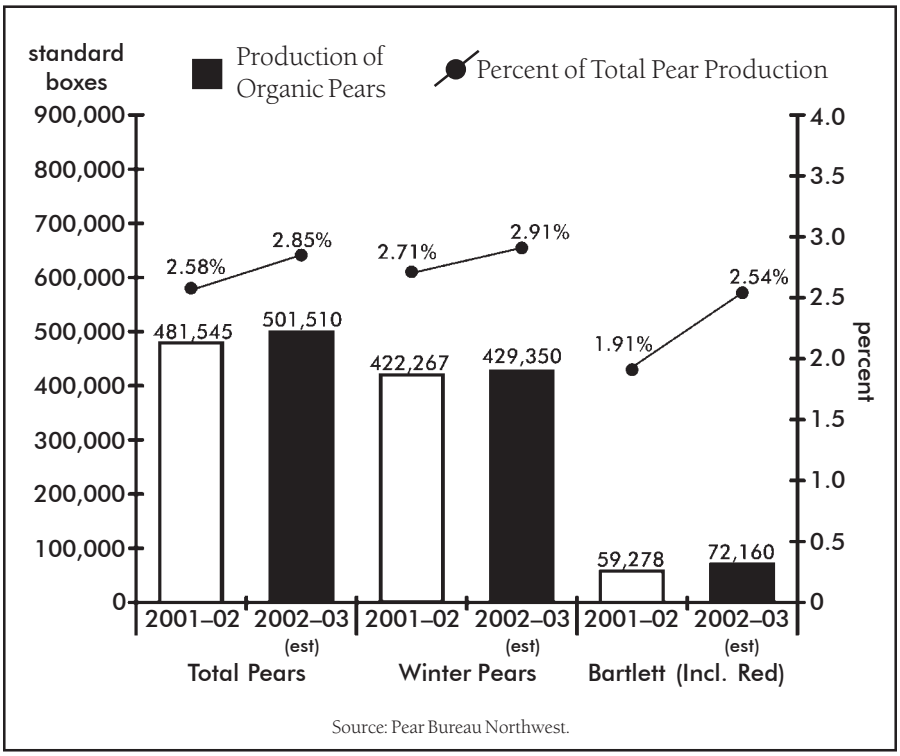
expected to be 106,000 boxes, 80 percent of it coming from Washington.

PBN began collecting data on the production of organic pears in Washington and Oregon for the 2001–02 season, when about 422,000 standard boxes of organic winter pears were produced, representing 2.7 percent of total winter pear production in the northwest. According to PBN, some small growers may not have reported their organic shipments and there could have been as much as 10 percent more organic pears produced that year.

For the 2002–03 season, PBN forecasts production of organic winter pears to be about 430,000 boxes, a 2 percent increase from the previous year and about 2.9 percent of forecasted production of winter pears overall. In contrast, production of fresh organic Bartlett (summer) pears in the northwest increased by 22 percent but still represents only 2.5 percent of the region's total fresh production of Bartletts (Figure 3.6)(PBN).

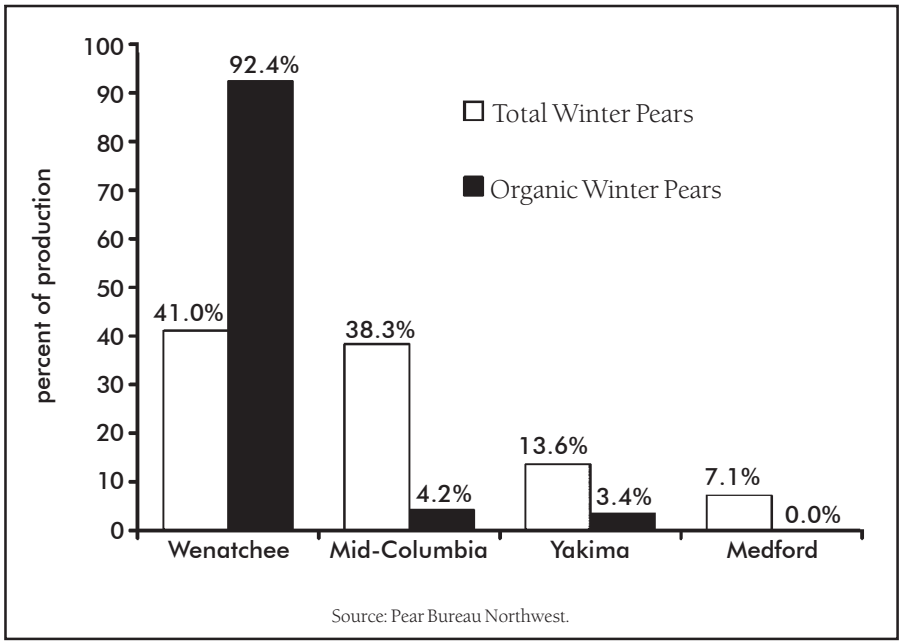
The total organic acreage of northwest winter pears can be estimated from PBN's production numbers and Granatstein's acreage figure by assuming that Oregon and Washington obtain the same yields. The result is 1,014 acres, which may slightly overestimate actual organic acreage since, for simplicity, Mid-Columbia acres were ascribed entirely to Oregon when part of that region is actually in Washington.

Figure 3.6. Production of Northwest Organic Pears in 2001–02 and 2002–03



Source: Pear Bureau Northwest.

Figure 3.7. Distribution of Northwest Winter Pear Production by Districts: Organic vs. Total Production (2002–03 Estimates)



Source: Pear Bureau Northwest.

Northwest organic winter pear orchards raise a higher proportion of Anjous and fewer Boscs than conventional winter pear orchards do. PBN estimates that 81 percent of organic winter pears in 2002–03 will be

Table 3.3. D'Anjou Pear Enterprise Budget for a Conventional and an Organic Orchard in 1992, Economic Costs and Returns

Variable Costs ($ per acre)	Conventional	Organic
Fertilizer	62.78	30.40
Herbicide/biological weed control (organic)	77.11	47.50
Spray program (conventional: 7x; organic: 16x)	602.05	813.24
Mowing (conv: 4x; dandle mower, 2x)	23.67	18.26
Harvesting	532.16	475.89
Other variable costs	686.38	686.38
Interest: Operating capital	24.80	25.90
Total Variable Costs	**$2,008.95**	**$2,097.64**
Fixed Costs	**Conventional**	**Organic**
Machinery, equipment, depreciation, interest, and housing	193.05	231.47
Other fixed costs	268.06	268.06
Land interest charge	350.00	350.00
Tree depreciation and interest	500.00	500.00
Total Fixed Costs	**$1,311.11**	**$1,349.53**
Total All Costs	**$3,320.06**	**$3,447.17**
Income	**Conventional**	**Organic**
Quantity (boxes)	723.18	393.38
$/Box	7.85	9.22
Gross Income	**$5,677.00**	**$3,628.58**
Projected Net Revenues	**$2,356.94**	**$181.41**

Source: Clark Seavert, Washington State University.

Anjous, which make up 74 percent of total production (all pears). This is an increase from 2001–02, when Anjous made up 74 percent of organic winter pear production. PBN estimates that Bosc pears will represent 16 percent of organic winter pear production and 19 percent of total winter pear production in 2002–03. This is a decrease from the 21 percent share they held in 2001–02. Red Anjous make up only 4 percent of organic winter pears and are less important than in conventional systems, while the other winter varieties (e.g., Comice and Seckle) are not organically grown.

Six of the nine handlers reported that their organic winter pear production has been increasing over time; production for the other three has remained steady. Seven handlers stated that total organic winter pear production is increasing. The other two, however, believe production in the northwest has reached market saturation.

One of the shippers interviewed gave personal estimates of organic production of Anjou and Bosc pears in the northwest. He estimated 125,000 boxes of organic Anjous and 25,000 boxes of organic Boscs for 2000–01, the year before PBN started tracking organic production. Assuming that 4 percent of production is Red Anjou, his estimate would put total organic production in 2000–01 at 156,250 boxes. His 2001–02 estimate for organic pear production was very close to PBN's estimate (92 percent of PBN's figure); his forecast for 2002–03 was about 15 percent higher than PBN's forecast but still very close.

Organic northwest winter pear production is heavily concentrated in the Wenatchee region, which generated 92.4 percent. The Mid-Columbia region produces only 4.2 percent of organic northwest winter pears. Conventional northwest winter pears are more evenly distributed; 41 percent come from Wenatchee and 38 percent from Mid-Columbia (Figure 3.7).

Cost of Production of Organic vs. Conventional Pears

A study conducted in 1992 by Clark Seavert of Washington University analyzed costs of production for both conventional and organic Anjou pears in the Hood River area. His results show that organic costs per acre exceed conventional costs by $127 per acre ($3,447.17 compared to $3,320.06)(Table 3.3).

Two-thirds of this cost increase is due to the machinery and materials used in the organic spray program. Costs for harvest labor are higher for conventional production because conventional yields are higher and harvest costs are calculated on a per-box basis. The sales price per box of Anjous was $9.22 for organic and $7.85 for conventional. Even with this premium of $1.37 per box, the combination of a much lower yield (393 boxes per acre for organic compared to 723 boxes per acre for conventional) and higher costs of production resulted in organic production being less profitable than conventional.

A more recent study conducted at Washington State University by Glover et al. (2002) analyzed the first six years of production of golden delicious apples (1994–1999) in the Yakima Valley of Washington. This study compared three production systems: conventional, integrated, and organic. In years one, two, four, and five, organic costs exceeded conventional costs. In the sixth year, organic costs began decreasing and dropped below conventional costs, which kept increasing. Over the course of the six-year study, organic production was more costly than conventional.

There was no harvest during the first two years. Once harvesting began, the average yield was a little higher for conventional than for organic production (58.6 bins per acre compared to 54.9 bins per acre), but the average bin value was considerably higher for organic apples ($101.20 per bin compared to $69.80 per bin for conventional). As a result, organic production was more profitable than conventional production over the study period even though the organic yield was very low the last year (1999). In addition, the authors point out that there is a risk of increased pesticide costs for conventional production in the next few years due to government regulation of chemical applications. They also note that growers who are not familiar with organic production practices may incur higher production costs until they learn to produce organic apples efficiently.

Pear production is very similar to apple production. The cultural operations are the same, except that pears do not need to be thinned as apples do. Thinning must be done partially by hand and therefore represents an important cost for both organic and conventional apple production. On average over the four years of the study, the cost of thinning was $268.40 per acre for organic production (4 percent of average total costs) and $381.80 per acre for conventional production (5 percent of average total costs).

Other sources of information indicate that organic production is more expensive than conventional production. One of the nine handlers surveyed for this study and organic growers interviewed by *Good Fruit Grower* stated that organic pear and apple production is more expensive than conventional production. Cliff Parker, owner of a sizable organic pear operation in the Wenatchee Valley (190 acres) was interviewed by *Good Fruit Grower* in 1997. According to him, organic pear production costs more because of labor-intensive tasks such as mowing and additional wear and tear on equipment because of the greater number of applications of products such as insecticidal soaps. Bob Brody, an apple marketer from Wenatchee who was interviewed in 1999, estimated that it is about 25 percent more expensive to raise a quality organic apple crop because chemical thinners, herbicides, and synthetic fertilizers cannot be used.

Pear psylla is an insect pest that affects only pears. According to David Granatstein, it is very expensive to destroy pear psylla in organic orchards. He believes production costs will decrease once a way is found to fight psylla effectively using organic methods.[20]

Marketing

U.S. Pear Trade

Exports have become increasingly important for U.S. pear producers: 18.3 percent of the 2001 U.S. pear crop was exported, more than twice the 8.6 percent exported in 1989 (USDA NASS and USDA ERS). The percentage exported was higher for fresh pears: 33.8 percent of the 2001 U.S. fresh pear crop was shipped to foreign markets, again more than twice the proportion exported in 1989 (16.2 percent)(USDA ERS). Also, 37 percent of the 2000–01 northwest winter pear crop was exported (PBN).

Canada and Mexico together received more than three-quarters of U.S. pear exports. The U.S.

[20] Personal conversation with D. Granatstein, July 2002.

traditionally captures about 70 percent of the Canadian import market for fresh pears and has dominated Mexican imports throughout the last decade, achieving a market share of about 98 percent. This success is partly due to NAFTA (North American Free Trade Agreement) and to increased promotion activities funded by USDA under the Market Access Program (MAP)

In 2000, the northwest tree fruit industry succeeded in eliminating pears from the Export Apple and Pear Act. This act, passed in 1933, imposed minimum standards for exported pears. However, five amendments in the 1990s had already allowed low-grade pears to be shipped to developing countries. The exemption of pears from this act could open new markets for low-grade and low-price pears.

Seasonality of Marketing

Winter pears are available on the fresh market from their harvest in September to about July of the following year, with most sales occurring from November through February. Storage technologies, however, are extending the marketing season for all domestic pears. Currently, pears generally can be kept in cold storage for four to five months without damage and as long as 12 months in ideal conditions. As a result, winter pears, which already compete with Bartletts when their seasons overlap in early fall, face continued competition from summer pears still in the fresh market into December. In addition, imported fresh pears begin arriving in February and peak in February and March, creating a second wave of competition and lower prices for domestic pears that were stored for late release. As a consequence, domestic winter pears are almost never alone on the fresh pear market, unlike Bartletts, which appear on the fresh market in August when other pears are no longer present. U.S. imports almost doubled during the last decade and represented 20.6 percent of U.S. pear consumption in 2000, compared to 13 percent in 1990. This near doubling of U.S. imports in concert with a simultaneous doubling of U.S. exports signals the demand from consumers worldwide for a year-round supply of pears.

Winter Pear Consumption

Consumption of pears in the U.S. increased by 118 percent between 1970 and 1987, when it reached 854.7 million pounds (Figure 3.8)(USDA ERS). Eighty-five percent of this increase came from an increase in per capita consumption; the rest was due to population increases. Since 1987, however, per capita consumption has remained steady. The small increase in consumption can be explained solely by population growth. In 2000, Americans ate an average of 3.2 lbs of pears and 17.4 lbs of apples. Italians during the same period consumed 32 lbs of pears per capita.[21]

No data were available on consumption of organic pears in the U.S. The handlers interviewed in this study were split five to five over whether there is a large demand for organic pears in this country. Two of the handlers who believe there is large demand, however, were pessimistic about the future. They anticipate a much faster increase in production than in demand, which will result in overproduction of organic pears in the next few years.

One handler stated that customers who buy organic products care more about the way they were produced and prefer organic and local retail outlets over large supermarkets. According to another handler, consumption of organic products is higher in segments of the population for whom food safety is an issue, particularly parents of young children. A third handler noted that these shoppers also are more socially and environmentally conscious and more affluent.

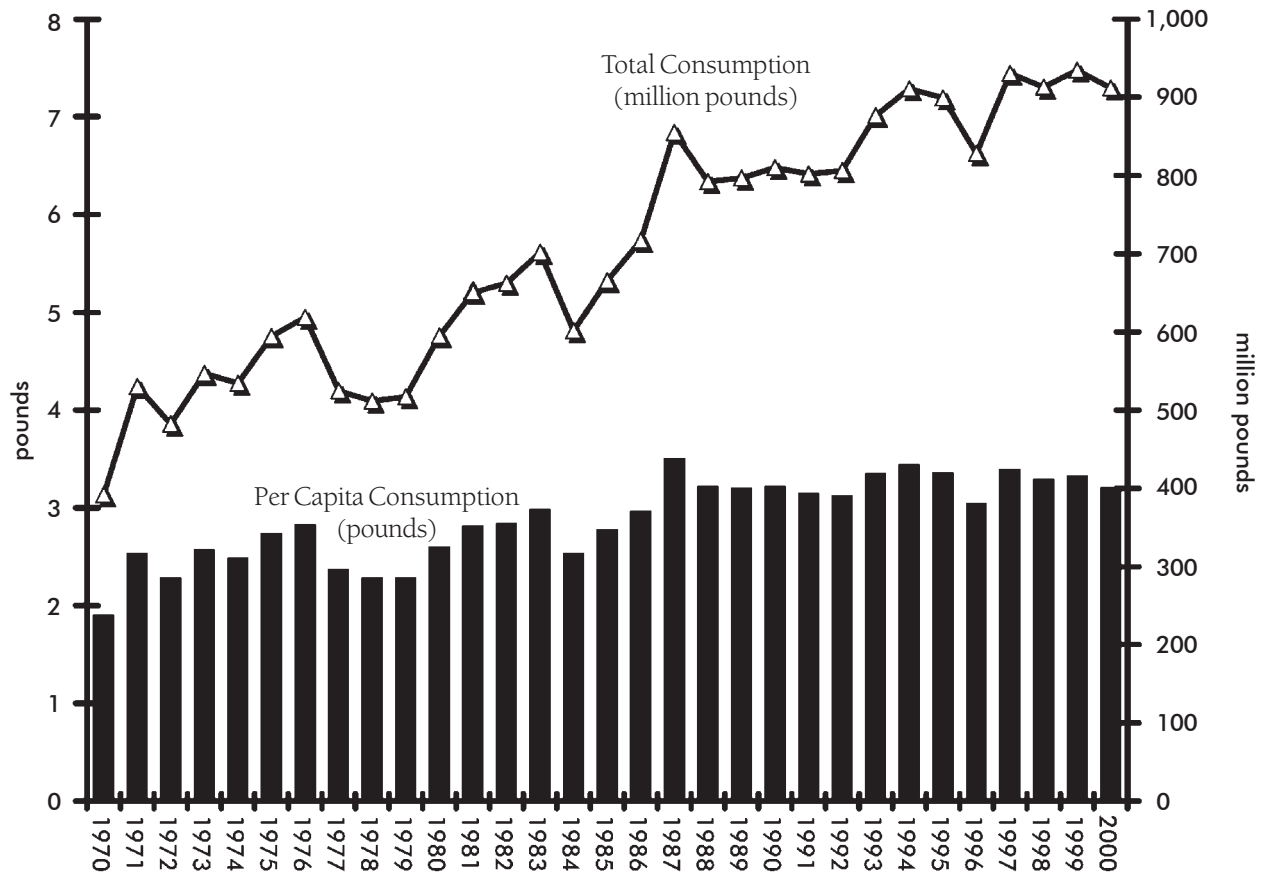
Post-Harvest Handling, Grades, and Standards

As mentioned previously, winter pear varieties are picked in the fall (from August through October) and Bartletts are harvested in late July and August. Pears are harvested by hand when the fruit is fully mature but not ripe; pears that ripen on the tree lose much of their flavor and the flesh becomes "gritty." Cross-pollination is required for most varieties, and producers generally mix varieties in their orchards.

From August through September, orchard bins full of winter pears are delivered to packing houses, where the pears are immediately cooled to slow the ripening

[21] *Good Fruit Grower*, 1997.

Figure 3.8. Consumption of Fresh Pears in the U.S., 1970–2000



Source: USDA Economic Research Service, *Fruit and Nuts Situation and Outlook*, various issues.

process. They then are placed on water transport conveyors to prevent bruising and are sorted and separated by size and grade before being packed.

There are three principal USDA grades for winter pears: U.S. Extra No. 1, U.S. No. 1, and U.S. No. 2 in descending order. Defining characteristics are maturity, cleanness, shape, and absence of damage. The level of tolerance in the attribution of grades for a given lot is usually 10 percent. Any damage developed after storage or transit does not affect the grade.

The winter pear marketing order does not require adherence to USDA standards, but most handlers use them. Washington and Oregon have additional state standards. Oregon's standards (Extra Fancy, Fancy, and Commercial) are equivalent to the U.S. Extra No. 1, U.S. No. 1, and U.S. Combination grades. Washington's standards (Extra Fancy, Fancy, Fancy Select, and Fancy No. 2), on the other hand, are somewhat more stringent than corresponding federal standards. Handlers can grade Washington fruit according to U.S. standards or Washington standards. Pears that do not make grade are sold for processing (primarily for juice).

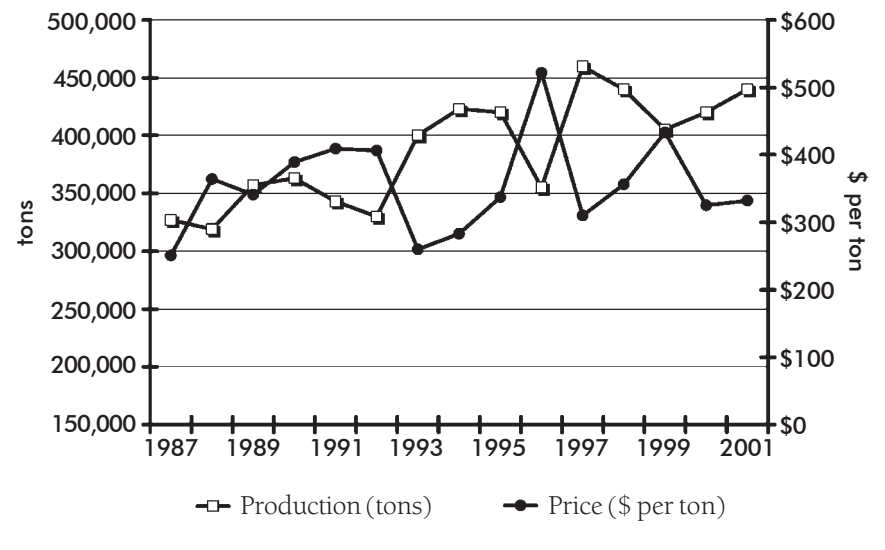
Pears are packed into plastic-lined cartons after having been individually hand-wrapped or placed in fitted trays. The standard box of four-fifths of a bushel (about 44 lbs and 18 inches long, 11.5 inches wide, and 8.5 inches deep) is the most popular for winter pears.

The Euro box, a carton with a metric footprint based on dimensions of 40 cm by 60 cm, is the package typically used by European pear handlers. Some large U.S. retailers now demand the Euro box instead of the larger U.S. standard box as they push for a standard footprint for all produce. The Euro box has only one

or two layers and can be put directly on display without unpacking. PBN believes that adoption of the Euro box by the U.S. pear industry would facilitate exports.

Packed pears are then held in cold storage until they can be sold on the fresh market. Controlled atmosphere storage helps increase the life of the fruit. After cold storage, most winter varieties must be kept for a time (at least four to eight days) in a warm moist area so they begin to ripen. Ripening can be done by the retailer or by consumers if the retailer sells the fruit directly from cold storage. In the U.S. domestic market, pears generally are not ripened before being sold to consumers. However, several studies conducted by PBN note that most U.S. consumers buy pears on impulse. They want ripe fruit and dislike waiting six to ten days for a pear to ripen. In addition, at-home ripening is hard to do well because winter pears generally do not change color when they ripen.

Figure 3.9. Production and Price of Non-Bartlett Pears in the U.S., 1987–2001



Source: *Noncitrus Fruits and Nuts–Summary*, Agricultural Statistics Board, NASS, USDA.

Winter Pear Prices

Various factors play a role in determining the price of Anjou pears, which represent three-quarters of winter pear production: fruit quality, overall demand for pears, the quantity and price of competing pears, and time of year.

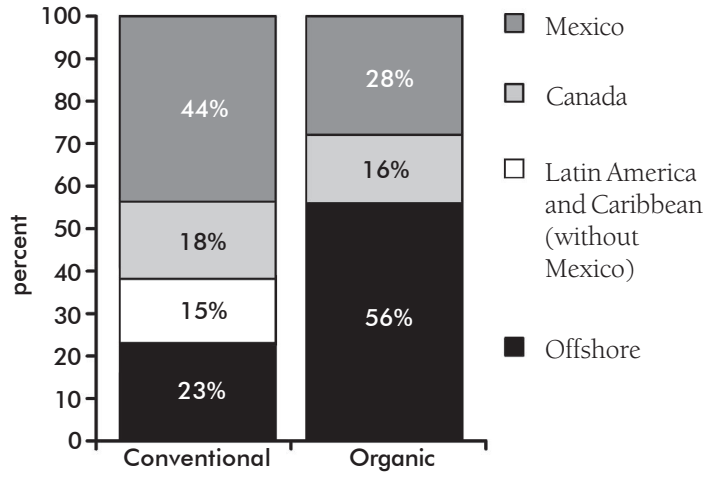
On average, prices for winter pears are higher than prices for Bartletts (an average of $355 per ton for fresh winter pears versus $326 per ton for Bartletts for 1987 through 2001). However, winter pear prices fluctuate considerably from one year to another based on variations in production. In the past 15 years, for example, prices have ranged from a low of $251 per ton in 1987 to a high of $522 per ton in 1996 (Figure 3.9) without any discernible trend.

For the past few years, many conventional pear producers have found that their revenues are not adequate to cover rising production costs. Gutman (2000) found that the winter pear industry enjoyed economic profits prior to 1998, when producers faced little competition in the fresh market from imports and domestic Bartletts. Demand for winter pears was high because they were the only pears available. Competition from imports and other varieties has increased tremendously since the end of the 90s, however, leaving less room for the winter pear industry to realize higher seasonal prices. Since the last half of the 1999 season, returns have been below the cost of production[22] for many growers.

Additional pressure on prices came from increased production of northwest winter pears in 2000 and 2001. Production and competition combined to reduce the average per-ton price for domestic winter pears from $433 in 1999 to $325 in 2000 and $332 in 2001. The 2001 price is particularly notable because it remained low despite a drop in imports and a decline in the share of Bartletts sold on the fresh market. The Washington Pear Growers Association, a statewide cooperative, was created in March 2001 to improve returns through higher prices, thereby addressing growers' concerns that the pear industry could become as weak economically as the apple industry has become.

[22] *Good Fruit Grower*, 2001.

Figure 3.10. Distribution of Winter Pear Exports, 2001–02



Source: Season Summary, *Statistical Annual Report 2000–2001*, Winter Pear Control Committee; *Final Organic Crop Report No. 6*, June 21, 2002, Pear Bureau Northwest.

U.S. Organic Pear Trade

According to Kevin Moffitt (president of PBN), the countries exporting the largest quantities of conventional pears to the U.S. (Argentina, Chile, New Zealand, and South Africa) also send organic pears to the U.S. fresh market.

A report from PBN dated June 21, 2002, stated that 96 percent of northwest organic winter pears from 2001–02 had been sold and only 4 percent remained in storage. Seventy-six percent were sold on the domestic market and 24 percent were exported. Thirteen percent were shipped offshore, 6.6 percent were sold to Mexico, and 3.8 percent were sent to Canada.

A larger share of conventional northwest winter pears are exported (37 percent of winter pears overall versus 24 percent of organics). More than half of exported organic winter pears are shipped offshore, compared with only 13 percent of all winter pear exports (Figure 3.10). The United Kingdom is the largest export market for organic northwest winter pears (Kevin Moffitt, PBN).

A majority of the organic shippers interviewed (six out of nine) export organic winter pears. The proportion of each handler's pack that is exported varies from 5 to 40 percent; most export between 10 and 20 percent.

Marketing Outlets for Organic Winter Pears

Five of the nine handlers interviewed sell to large chains and specialty stores. Only one of those also sells some pears at a farmers market. Three of the five shippers sell organic winter pears to large chains, specialty stores, wholesalers, and brokers. The other two sell only to large chains and wholesalers. The largest part of the organic winter pear crop goes to chain grocery stores (some of which specialize in organic commodities).

Three of the handlers contract with their buyers (processors or distributors), which provides a guaranteed price for the handler and a stable supply for the buyer. One of the handlers is planning to form a special partnership with a large supermarket chain through which the handler will guarantee daily shipments of a specified amount of organic apples and pears to the stores in return for a guaranteed special in-store display and constant price for his fruit. Part of the profits will be donated to a foundation that serves underperforming school children.

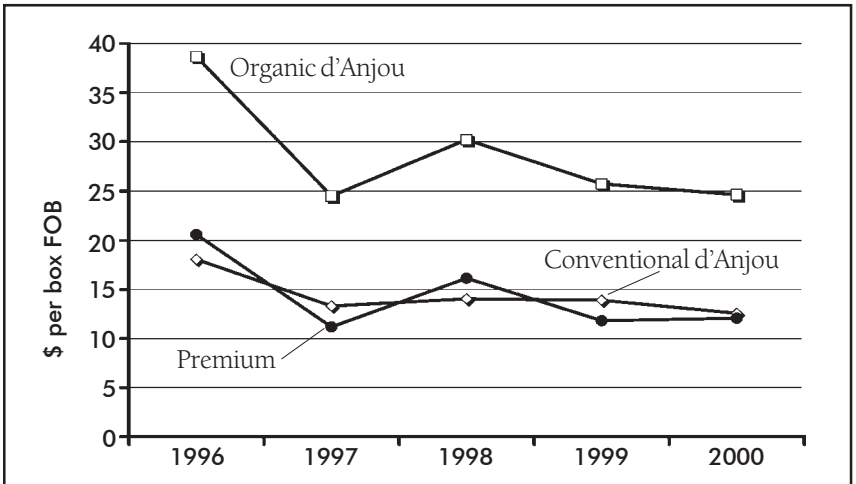
Post-Harvest Handling of Organic Winter Pears

All the organic handlers who were surveyed sort their fruit according to USDA standards. Organic winter pears that do not meet the standards are either processed at the handlers' facilities or sold to organic processors to make organic fruit juice and baby food. Handlers were divided over whether additional industry-wide minimum quality standards would help them market their organic fruit. One of the handlers emphasized the necessity of applying Washington's pear standards, which are more stringent than the USDA's, to all winter pears. Another shipper noted that organic pears need to be better differentiated from conventional pears at the consumer level by, for example, educating consumers about organic standards.

According to most of the organic handlers interviewed for this study, packaging is the same for conventional and organic pears. Half of our sample use both standard (four-fifths of a bushel) and half standard (two-fifths of a bushel) boxes. The other half use only standard boxes. Half of the handlers have kept the same mix of containers over time, but two have recently started using the Euro box and modified-atmosphere bags.[23] One handler stated that packaging of organic pears is strongly driven by consumers and that the retail industry needs to properly identify organic fruit. Another handler reported a trend towards plastic clamshell boxes containing only four or five organic pears.

The custom packing charge (the fee charged to the grower for packing their fruit from bins into boxes) seems to be the rule for organic handlers. Five handlers reported their packing charges, which ranged from $5.50 to $9.00 per standard box, depending on the packout (percentage of the fruit delivered that is saleable and does not have to be culled out). The larger the packout, the lower the charge per box. A third of the organic handlers interviewed stated that the charge has been increasing in recent years, and two predicted that the charge will continue to increase in the future. A majority of the handlers (six) reported that their packing charges are the same for conventional and organic pears. Two handlers said that their charge is higher for organic pears because the quality requirement is higher and the volume of the typical organic pack is smaller.

Figure 3.11. Comparison of Prices for Conventional and Organic Pears, 1996–2000, Washington d'Anjou Pears



Source: *Current Trends in Organic Tree Fruit Production*, David Granatstein and Elizabeth Kirby, May 2002.

Organic Winter Pear Prices

Granatstein (2002) reported organic pear prices from the Washington Grower's Clearinghouse Association, which began collecting price data in 1996, offering an idea of general price trends for organic pears in that state. In the 1990s, prices for organic pears were high. Organic Anjous and Boscs sold for more than double the conventional price—about $39 per box for organic Anjous and $18 per box for conventional. Organic Boscs sold for about $41 per box, compared to about $18 per box for conventional (Figures 3.11 and 3.12). Since then, both conventional and organic prices have decreased, as has the organic premium. In 2000, organic Anjous still sold for twice the conventional price, which was considerably lower (about $25 per box of organic and $13 per box of conventional). Thus, the premium was reduced from $20 per box in 1996 to about $12 in 2000.

The handler interviews revealed much lower price premiums than those in Granatstein's study. Six of the nine surveyed handlers confirmed the existence of a premium for organic pears. According to three of them, the organic price is 20 to 25 percent higher than the conventional price. Another described premiums ranging from $4 to $8 on organic Anjous selling for $14 to $20 per box and on organic Boscs selling for $20 to $25 per box. One handler reported a very small premium of $1 per box.

Two of the other three handlers in the study did not mention the existence of a premium and the third sold his organic pears in 2001 for

[23] Modified Atmosphere Packaging (MAP): Modified atmosphere bags (polyethylene liners) are used inside pear cartons (four fruit per bag) to control atmosphere conditions instead of subjecting the container to controlled atmosphere storage. MAP can extend storage life.

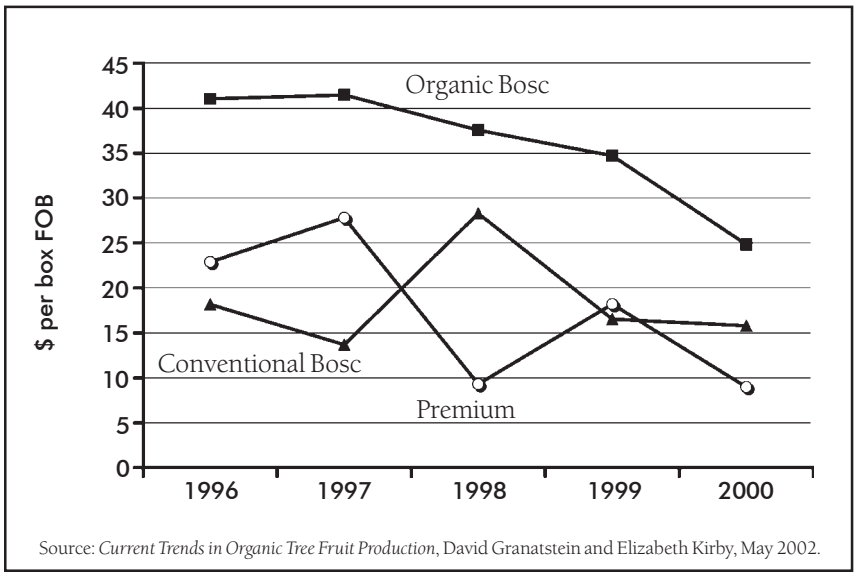
less than the conventional price. He mentioned prices as low as $10 per box for organic Anjous and $17 per box for organic Boscs.

Overall, handlers were pessimistic about the future of organic pear prices. Half of the sample (five handlers) said that the organic price has decreased in recent years and that it is approaching the conventional price. In three of these cases, the handler attributed the price decrease to overproduction. The other five handlers believe that organic prices rise and fall with conventional prices. One of them added that in the past organic and conventional prices were not related but that the situation has changed. Another handler mentioned that when the conventional price decreases it becomes difficult to sell organic pears without decreasing their price as well. Similarly, when the conventional price increases, the organic price also increases.

Only one handler reported prices for organic and conventional pears as having distinct trends. According to him, the price in both instances is based on supply and demand but the conventional price varies more during the season than the organic price does. The same handler has noticed that organic prices are stronger at the beginning and at the end of the winter pear marketing season and weaker in October and November.

Four of the handlers have sold some organic pears as conventional. From their responses, it seems that small and low-grade organic winter pears are most likely to be sold to conventional markets. PBN confirmed that some organic winter pears were sold as conventional in 2001–02.

Figure 3.12. Comparison of Prices for Conventional and Organic Pears, 1996–2000, Washington State Bosc Pears



Source: *Current Trends in Organic Tree Fruit Production*, David Granatstein and Elizabeth Kirby, May 2002.

Federal Marketing Order for Northwest Winter Pears

Grades, Sizes, and Quality

The winter pear marketing order authorized grade, size, and quality regulations for fresh winter pears. Size and grade regulations have been used in the past, but they were suspended in 1979. Since then, the marketing order committee has made only recommendations on maturity (temperature and pressure before shipping). In 2000, however, winter pear growers voted to include a new federal rule in the marketing order. This rule requires Anjou pears shipped to North America (continental U.S., Canada, and Mexico) between August 15 and November 1 of each year to be certified by the federal-state inspection service as having a core/pulp temperature lowered to 35 degrees Fahrenheit or less and an average pressure test of 14 pounds or less. The objective of this rule is to improve ripening of winter pears.

Proposed rules were recently submitted to pear producers to authorize WPCC to recommend maturity regulations and container or marking requirements. The referendum was conducted among winter pear producers between July 17 and August 2, 2002. According to results published October 7, 2002, on the USDA Agricultural Marketing Service Web site, the two amendments failed to receive the two-thirds approval necessary to pass.

Research and Promotion

The federal marketing order for pears also authorizes production research, marketing research, market development, and promotion activities. These programs are currently active. Promotion and marketing activities are contracted to PBN, which

Table 3.4. Winter Pear Control Committee Funding (February 5, 2002)

	2002 WPCC Funding	Use for Organic Winter Production
Projects for Enhancing Product Quality		
Epidemiology of Bulls Eye Rot in Pears	$34,149	Yes
Post-Harvest Physiology of Winter Pears	$40,000	Yes
Storage Decay Controls	$20,000	No
Control of Decay in Pears	$38,044	No
Management of Pear Fruit Ripening (MCP)	$26,546	No
Phacidiopycnis Rot of Pears	$12,780	Yes
Biology of Pear Pests	$30,050	Yes
Integrated Fire Blight Management	$16,100	No
Chemical Ecology of Pear Psylla	$20,230	Yes
Biochemical Approach for Estimating Psylla Predation	$28,600	Yes
Other		
Pear Varieties Testing	$6,000	Yes
Pear Phytonutrients	$25,000	Yes

Source: Pear Bureau Northwest and George Ing (chairman of WPCC's research subcommittee).

conducts advertising campaigns and consumer research. WPCC's research committee handles production research.

WPCC's assessments on winter pears are paid by producers and collected from handlers based on the volume of winter pears sold. Until the 1980s, assessments were voluntary. An industry referendum in the 1980s made them mandatory. Since the 1998–99 marketing year, the assessment has been 49 cents per standard box (four-fifths of a bushel, 40 to 45 lbs). This is one of the nation's highest assessments on a tree fruit. Two cents go to research projects and 44 cents to PBN for promotion of fresh winter pears. The remaining three cents per box pay for administrative expenses. Recently, a three-cent increase was approved by WPCC to fund a research project on ethoxyquin residue on stored Anjous. Since this pesticide is not used in organic production, organic growers are exempt from the fee. Thus the total assessment for conventional Anjous is now 52 cents per box.

The 2002 Farm Bill exempts persons who market solely 100 percent certified organic products from any portion of marketing order assessments that goes to commodity promotion. On December 1, 2003, USDA proposed an amendment to the northwest winter pear marketing order to implement this exemption.

Fresh winter pears promoted by PBN are under the "USA Pear" label, while fresh Bartlett pears are promoted under both the "USA Pear" logo and the "Northwest Bartletts" logo.

For decades, PBN has focused its efforts on educating consumers about how to ripen pears at home. More recent research projects have been focused on providing retailers with ready-to-eat pears by way of ethylene preconditioning, which reduces ripening time for consumers to three or four days. However, the risk of damaging fruit that has been preconditioned is greater, so more care must be taken in handling and shipping the nearly ripe fruit. In New Zealand, research is being conducted on new varieties of pears that consumers could eat at the time of purchase or after a

short ripening period at room temperature.[24] These varieties result from crossbreeding between European and Asiatic pears.

The winter pear marketing order has funded research projects for about 30 years. The two cents per box that pays for these projects represent 4 percent of the total assessment—about $300,000 annually in recent years. According to George Ing, chairman of WPCC's research subcommittee and a pear grower in the Hood River area, "organic growers have been expressing their research interests to WPCC for perhaps ten years." None of the research projects explicitly address organic production, but most of them benefit both conventional and organic growers (Table 3.4).

WPCC funds research in two categories: enhancing product quality and plant protection. In the first category, the six projects currently under way address improving the quality of fruit during storage. Three of the projects help both organic and conventional pear producers—a study of bulls eye rot, a disease that causes fruit loss, and of orchard practices that could reduce it; a study on the effect of various atmospheres on the storage life of pears; and a study of *Phacidiopycnis* rot. Three of the four plant-protection projects benefit both organic and conventional production. Topics include the biology of pear pests (mostly pear psylla) and the potential for predators as non-chemical control agents; the chemical ecology of pear psylla; and psylla predation. Two additional projects relate to both organic and conventional winter pears. A study on imported pear varieties is testing their suitability for cultivation in the northwest and their resistance to diseases and other pests. The last project relates to pear phytonutrients and their potential benefits for human health.

The contribution of organic growers to the research projects is about $8,500—2.8 percent of the total research fund. In contrast, projects that are potentially useful for the organic pear industry represent $186,809—two-thirds of the total research fund ($283,599 in 2002). Thus, organic growers receive a large benefit from the assessment for research. George Ing added that organic growers "have had praise for the WPCC research program and have not criticized any aspect of it."

Organic Market Promotion

WPCC recently introduced a definition of "organically produced pears" into the rules and regulations defining the marketing order for winter pears. Two percent of all of the money collected through assessments is used to promote organic pears. PBN joined the Organic Trade Association in 2002 and regularly conducts marketing campaigns for organic pears, both domestically and internationally (e.g., in the United Kingdom, Mexico, and Asia). For U.S. promotion, most of the budget for organic pears is dedicated to generic advertising and in-store sampling. PBN works mainly with Whole Foods and Wild Oats, two large natural food store chains, but also tries to reach smaller retailers across the country. At the international level, PBN is involved in trade advertisements, organic trade shows, and retail promotion, primarily in the United Kingdom but also in Germany. Overall, organic pears are promoted much like conventional ones. The emphasis is on the nutritive and taste qualities of the fruit and the proper way to ripen pears after purchase.

Organic Handlers' Views of the Winter Pear Marketing Order

Overall, the organic handlers who participated in the study were not very enthusiastic about PBN's promotion activities. Six of the nine handlers believe that the advertising and promotion programs are somehow helpful but remain skeptical about them. To improve the advertising programs, two of the handlers suggested complete separation between organic and conventional promotions. They insist that it is essential to promote organic pears on the basis of their positive impact on the environment. One handler also suggested improving the advance notice provided to organic shippers for upcoming promotions. Another advocated establishing a minimum price, a step that falls outside the authority of the marketing order. A handler pointed out that PBN is new to the organic market, so its promotion efforts will likely improve over time.

Most of the handlers in this study (seven out of nine) do not do any direct advertising, implying that they do not see an advantage to advertising in general.

[24] *Good Fruit Grower*, July 2000.

If true, this explains their lukewarm attitude toward PBN's marketing program.

Two-thirds of the handlers had a positive view of WPCC's production research projects. One handler expressed appreciation for the environmentally friendly nature of the projects. Still, handlers generally felt that the ranking of research priorities at WPCC is based on the needs of conventional growers.

Organic Growers' Views of the Winter Pear Marketing Order

In the early 1990s WPCC formed a subcommittee on organic pears charged with preparing recommendations to WPCC regarding the interests of organic growers and handlers. The subcommittee reviewed the order's marketing and research programs, comparing the benefits derived by the organic pear industry to the assessments paid by organic growers. The subcommittee also considered whether sending the funds provided by organic producers elsewhere would be more effective and the potential value of forming an organic commission. In 1998, organic producers took a vote and 85 percent chose to stay with the WPCC marketing order.

There was regional disagreement, however. A few organic growers in Oregon wanted to be exempted while the more numerous Washington growers wanted to stay in the program. WPCC does not have the authority to exempt only Oregon organic growers because the production area is defined as pears in Oregon and Washington. There is no provision in the marketing order allowing individual states or regions to be treated differently; WPCC can exempt all or exempt none. Consequently, the Oregon growers' request for exemption could not be considered.

The 2002 Farm Bill includes a section that exempts certified organic products from commodity promotion assessments. The U.S. Secretary of Agriculture has not yet issued regulations governing eligibility and compliance for an exemption, but according to the bill "A person that produces and markets solely 100 percent organic products, and that does not produce any conventional or non organic products, shall be exempt from the payment of an assessment under a commodity promotion law with respect to any agricultural commodity that is produced on a certified organic farm." On December 1, 2003, USDA proposed amendments to 28 fruit and vegetable marketing order programs that authorize market promotion activities. The marketing orders for northwest winter pears and California almonds are among the programs affected.

This study suggests that many organic producers would opt out of the assessment if allowed by the 2002 Farm Bill. One handler pointed out that Oregon growers are more likely to oppose the assessment than Washington growers. However, another handler stated his belief that the organic winter pear industry needs the marketing order efforts because the financial support it receives from all producers makes it more capable than individuals of promoting organic winter pears.

At the beginning of 2002, a group of 20 organic apple growers expressed their desire to opt out of the Washington Apple Commission and join a commodity commission representing all organic foods grown in the state.[25] Washington state legislators failed to act on a bill that would have allowed an organic foods commission to be formed but instructed the State Department of Agriculture to study the feasibility of such a plan. Of the 540 organic food producers in the state of Washington, 197 produce tree fruit. An additional 43 conventional producers are making the transition to organic. The Washington State Department of Agriculture has sent surveys to the state's organic growers to obtain their opinions.

[25] *Good Fruit Grower,* 2002.

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APPENDIX 3

Table 3.A1. Estimates of Organic Winter Pears, 2002–03 Season, in Standard Box Equivalents[1]

	Anjou	Bosc	Comice	Red Anjou	Total
Medford	0	0	0	0	0
Mid-Columbia	8,000	6,000	1,000	3,000	18,000
Wenatchee	333,150	56,000	0	7,500	396,650
Yakima	8,000	6,000	0	700	14,700
Total	349,150	68,000	1,000	11,200	429,350

[1] On average: 44 lbs/box.
Source: Pear Bureau Northwest.

Table 3.A2. Final 2001 Organic Crop Report No. 6 as of June 21, 2002 (standard box equivalent[1])

	Anjou	Bosc	Comice	Seckle	Red Anjou, Red Winter	Total Winter Pears	Bartlett	Red Bartlett
Packout								
Total Projected Packout	314,164	89,882	1,504	603	16,114	422,267	49,508	9,770
Packout to Date	314,164	89,882	1,504	603	16,114	422,267	49,508	9,770
Controlled Atmosphere (included in above)	150,725	31,596	0	0	2,194	184,515	6,492	0
Shipped								
Offshore	47,450	5,492	0	0	391	53,333	3,157	0
Canada	10,794	4,171	0	0	457	15,422	2,478	504
Mexico	25,664	1,005	0	0	0	26,669	0	0
Domestic	217,753	49,160	1,504	603	11,162	310,182	43,873	9,266
Total Shipped	301,661	89,828	1,504	603	12,010	405,606	49,508	9,770
CA Shipped (included in above)	120,093	31,421	0	0	2,107	153,621	6,492	0
Total Percent Shipped	96.0%	99.9%	0.0%	0.0%	74.5%	96.1%	100.0%	100.0%
Total Available[2]	12,503	54	0	0	4,104	16,661	0	0

[1] On average: 44 lbs/box.
[2] Total Available = Packout – Total Shipped.
Source: Pear Bureau Northwest.

Table 3.A3. Price Trends for Organic Pears in Washington ($/box FOB)

Variety in $ Per Standard Box[1]	1996	1997	1998	1999	2000
d'Anjou					
Conventional	18.07	13.32	14.05	13.91	12.57
Organic	38.67	24.50	30.20	25.73	24.64
Premium	**20.60**	**11.18**	**16.15**	**11.82**	**12.07**
Bosc					
Conventional	18.16	13.69	28.25	16.54	15.80
Organic	41.04	41.48	37.57	34.73	24.81
Premium	**22.88**	**27.79**	**9.32**	**18.19**	**9.01**

[1] On average: 44 lbs/box.
Source: *Current Trends in Organic Tree Fruit Production*, David Granatstein and Elizabeth Kirby, May 2002.

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