

# **ISSUES CONCERNED WITH THE MARKETING OF FRUITS, TREE NUTS AND VEGETABLES ISSUES IN THE UNITED STATES**

Hyunok Lee  
Department of Agriculture and Resources Economics,  
University of California, Davis  
Social Sciences & Humanities Bldg., Davis, CA 95616,  
USA

## **ABSTRACT**

*The economic importance of the fruit, tree nut and vegetable industry in the United States is significant. In 2000, these commodities generated a revenue of almost \$30 billion. This is 15% of the total farm cash receipts, or 30% of total crop revenues. The markets for these crops are diverse, ranging from fresh markets to many different forms of processed foods. Most fruits and vegetables are highly perishable. Because of this perishability, marketing is an important issue for many growers. In the fruit and vegetable industry, marketing contracts are common. Farmers are often engaged in forward contracts with either a shipper or a processor, or they belong to a marketing cooperative. Even though the United States produces a great variety of horticultural crops, the country is a net importer of these products and many U.S. industries face considerable international competition in the domestic market. Unlike many field crops, horticultural crops receive few subsidies. In the long run, the crucial government role for these crops is border protection and research, in order to prevent the entry of exotic pests.*

## **INTRODUCTION**

The horticultural industry in the United States is large and varied. It comprises hundreds of different kinds of fruits, vegetables and tree nuts. Because production is seasonal and local, produce is sold in a large number of different markets.

Many commodities are produced mainly for fresh markets, others are used mostly in processed form, while some products have important uses in both fresh and processed forms. The industry is also geographically diverse, with significant production centers in a half dozen states in the southern and western regions of the United States.

This Bulletin provides an overview of the major issues for these commodities in the United States. Before discussing specific issues, I would like to give a brief overview of the industry situation and trends, so that these issues may be seen in the perspective of U.S. agriculture.

## **OVERVIEW OF THE FRUIT AND VEGETABLE INDUSTRY IN THE UNITED STATES**

Agricultural commodities in the United States are worth about \$2000 billion per year, split equally between crops and livestock products. Of this, fruits, tree nuts and vegetables comprise about 15%. Of course, since value per area is large, the total area planted in these crops is less than 2%.

The total production of citrus fruit has shifted up and down with weather variation, but has grown by about 10% over the 1990s. Non-citrus fruit production has remained stable. Vegetable production has expanded by about 10%, mostly vegetables grown for fresh consumption.

The *per capita* consumption of these crops varies from year to year, depending on price, availability and consumer income. The overall trend is upward. The *per capita* consumption of fruits, vegetables and tree nuts grew by about 8% over the decade 1990-

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2000, with the consumption of fresh vegetables growing by 17%. Fruit consumption, especially of juice and fresh fruit, varied from year to year but also showed an increase over the decade.

Most farms producing fruits, tree nuts and vegetables are small by U.S. standards (10 ha or less in size), and sell less than \$50,000 worth of product each year. These are primarily part-time farms for families who earn most of their income off the farm. Some farms supplement the retirement income of elderly growers. However, a large part of the production of these crops comes from much larger commercial farms, whose operators are full-time. For almost all commodities, most of the production is from a farm operated by a single family or a group of closely related individuals, who often rent a considerable area of land. Non-family corporate farms are important, but they do not dominate production.

The most important crops in terms of gross value are grape, potato, orange, lettuce, tomatoe, apple, strawberry, mushroom, and onion. Following this group are about 20 more crops that are worth more than \$200 million per year. These include almond, peach, avocado and cherry.

California is by far the most important state for the production of fruits and vegetables. It produces about half the national total.

## INDUSTRY STRUCTURE

In this section, my discussion of the industry structure focuses on farm marketing issues (at the farm gate level). The main characteristic of fruits and vegetables, compared to field crops, is their perishability. The implications of this for marketing are important. Perishability plays the central role in shaping the industry structure.

Fruits and vegetables are sold for both fresh consumption and processing. Those eaten fresh have a higher value, but those used for processing are sold in larger volumes. Often different varieties are used for fresh and for processing. In this case, they are marketed separately (e.g. Valencia versus Naval oranges). However, some products, such as Thompson seedless grapes, are used for both fresh and processing purposes. In such a

case, the fresh and processing markets are interrelated.

Although farms in the United States are much larger than in Asia, most U.S. farmers are limited to the production of primary products. However, there are some exceptions in the fresh produce business. Some growers have operations downstream (i.e. post-harvest or product handling) to handle the marketing of their own production, and that of other growers. These growers are usually referred to as "grower-shippers".

They have their own packing plants. They control production, packing, and cooling facilities, and also arrange for both domestic and export sales. Many California grower-shippers obtain produce from other countries during the off-season, sometimes through joint ventures. However, for production designated for processing use, downstream operations are separated from production. In general, processors have little incentive to expand their operations into farm production.

There is a great variety of business arrangements between growers on the one hand, and shippers or processors on the other. The perishability of fruits and vegetables means that coordination in the activities involved in harvest and postharvest is important. One way is to integrate these processes vertically under the same owner. Another way is to coordinate activities through contractual arrangements between the buyer and seller. The grower-shipper case provides an example of vertical integration. Contractual agreements provide a more common form of coordination.

Production contracts and marketing contracts are both in use. Production contracts require that produce reaches certain quality standards, and may require specific cultural practices during production. Ownership of the produce may be transferred before the crop is harvested (Harwood *et al.*). Marketing contracts usually involve arranging a price between the buyer and farmer before the crop is grown. Marketing contracts may stipulate some cultural practices.

Almost all broiler chickens and hogs are produced under production contracts. For fruits and vegetables, marketing contracts are more common. In 1997, 8% of U.S. vegetables were produced under production contracts, and about 25% under marketing

contracts. In the same year, more than half the fruit was produced under marketing contracts.

Production contracts for vegetables are used when the buyer wants specific or uniform qualities that are sometimes required for processed products. In recent years, the number of contractual arrangements has been growing. A recent survey looked at the use of contracts in the California winegrape industry (Goodhue, Heien and Lee). About 90% of California winegrape growers produce under contract. Nearly all processing tomatoes are also produced under contract.

A collective form of contract, made possible by forming a cooperative, is also common in fruit and vegetable production. Cooperatives have been an important part of the agricultural marketing system in the United States, particularly for fruits and vegetables.

The role of cooperatives is strongest in California. In 1997, 185 farmer-owned cooperatives were operating in California, and 77% of all farms in the state were members of farmers' cooperatives (Kuminoff *et al.*). In the same year, of the total number of farm cooperatives, marketing cooperatives accounted for about 63%. They included 67% of the total membership and about 90% of net business revenue. About 65% of marketing cooperatives were made up of farms producing fruits, vegetables or tree-nuts.

## INTERNATIONAL TRADE

The United States both imports and exports fruits, vegetables and tree nuts. Trade in both directions is important, and becoming more so over time. In the year 2000, the United States exported about \$4.6 billion worth of fruits, fruit products and nuts, and about \$4.4 billion worth of vegetables and vegetable products. These exports went to many markets around the globe, especially Canada, Europe and Northeast Asia.

Imports were even larger than exports. Fruit and nut imports totaled about \$6.5 billion, with banana imports alone accounting for about \$1.1 billion. Vegetable imports totaled about \$4.7 billion. In all the recent data, the value of imported fruit, nuts and vegetables exceeded the value of exports of these crops.

The expansion of imports (and exports) reflect the increasing availability of fresh produce in what is the "off-season" in the local region, and the development of varieties that can withstand longer shipping times and distances. So, for example the United States is a major exporter of table grapes and fresh tomatoes during the spring and summer season, but a major importer of these crops from Mexico and South America in the winter months.

## POLICIES

The United States provides large subsidies for grains, oilseeds and cotton, but very little direct subsidy for horticultural crops. The small payments directly to producers that do occur are typically tied to particular disasters. For example, the Farm Security and Rural Investment Act of 2002 included special payments for apple growers to offset low market prices. It directs some additional funds to be used to purchase horticultural crops for school lunch programs and other government uses.

A more inclusive measure of policy support is the producer subsidy equivalent (PSE). The PSE measures the dollar value of government policy measures directed towards agriculture, in terms of the cost of input subsidy or the gross revenue equivalent of output subsidy. The PSE values trade barriers at the difference between domestic and border prices, and the value of input aids at the budget cost of the subsidy or the services provided. OECD and USDA provide PSE calculations for major field crops, but few estimates are available for horticultural crops. Sumner and Hart reported such estimates in 1997 for California. These calculations are still approximately accurate under current policy. Fruits and nuts in California had a PSE of about 6% and vegetables a PSE of about 3% for the period 1995 - 1997. These compare to about 34% for dairy products, 69% for sugar and 40% for rice during the same years. The rice and sugar PSEs are attributable to import barriers, and the rice PSE to direct payments. The rice support would be even higher under current farm policy. The very small PSE calculated for horticultural crops reflects a wide variety of government services such as research and

extension services, marketing and inspection services, some crop insurance benefits, some export marketing aids and some irrigation water subsidy. However, each of these contributions comprises a small share of total revenue. Most important, trade barriers for fruit and vegetable crops are low, and direct payments negligible.

Despite the low level of overall subsidy, it is useful to consider some of the roles that the government has taken in these industries.

### **Marketing orders**

Marketing orders are programs by federal and state governments that typically set minimum quality standards, and fund research and promotion on behalf of an industry. There are about 20 federal marketing orders for fruits, three for tree nuts, and twelve for vegetables. Most of these marketing orders cover only small local areas (only parts of single states), and have a limited scope.

These programs do not offer a general subsidy, but they may provide the industry with some benefits (including consumer benefits in some cases) that are paid for by both consumers and producers. The promotion part has become controversial, because it may allow a majority in an industry to impose rules, and assessments to pay for them, upon a minority who oppose the programs. For example, some large fruit producers in California have claimed that generic advertising blurs the quality distinctions between their fruit and those of other producers. They feel that they should not be compelled to fund such promotion, since it is not in the interest of their farms. These programs also apply to imports, on the basis that they too benefit from quality standards and generic promotion. International rules require that such promotion and standards be fair, and not biased against imports (Lee *et al.*).

A few remaining marketing orders for fruits and vegetables include limits on the quantities sold in various markets, or other supply controls. Most restrictions of this kind have now been removed, but for example, the raisin marketing order sets limits on domestic marketing and provides incentives for exports. In some years, it finances a reduction in the size of the raisin crop.

### **Research and extension programs, and related services**

Federal and state governments in the United States fund agricultural research and extension programs that benefit growers. Of course, the ultimate beneficiaries of these efforts are also consumers. Research and extension improve the competitiveness of the fruit and vegetable industries. No accounting is available for how much of these funds go to horticultural crops, but most evidence suggests that the share of research is roughly equal to the share of the crop value, or about 15% of the U.S. total. A significant share of the research is devoted to environmental improvement and other broad benefits, rather than increased production.

The Federal government and some state governments in the United States also provide inspections that limit the spread of exotic agricultural pests and diseases. The cost of this service is quite small, perhaps \$500 million per year in total. The benefits to the horticultural industry are very great, because an outbreak of exotic pests can be devastating.

### **Irrigation subsidy**

In the western United States, especially in California, the government has invested in large irrigation projects that provide relatively low-cost water to farmers. Fruits and vegetables are not the major beneficiaries of these programs, but they do enjoy some lowered production costs as a result. Most of the irrigation subsidy in California, which Sumner and Hart estimate as worth about US\$ 240 million per year, goes to field crops such as cotton, rice, hay and irrigated pasture, but a fraction, (perhaps 10%), is applied to tree crops and vegetables grown in the Central Valley of California. As a share of production costs, this subsidy is less than 1 - 2% of costs for most horticultural crops, because irrigation water is applied quite efficiently under modern methods. Processing tomatoes may be the largest single beneficiary of the fruit and vegetable crops.

### **Crop insurance**

In the United States, federally subsidized

crop insurance has been available mainly for field crops. However, the Federal government has been expanding its role in providing subsidized crop insurance for fruit, tree nuts and vegetables for several years, and the USDA has a mandate to provide crop insurance programs for as many crops as possible. The total crop insurance budget of about US\$2 billion per year is mainly spent on field crops, but a small amount (about 10%) is provided as subsidy to horticultural crops. In addition, the Noninsured Assistance Program provides free crop insurance for crop disasters, mainly for horticultural crops, with outlays averaging US\$100 million in recent years.

The expansion of crop insurance is controversial. Currently, about 25 fruit and nut crops are covered. It is difficult to design effective programs for other crops. Fewer vegetable crops are covered by crop insurance because seasonality, price variability, very localized growing conditions and other complications make program design exceedingly complex. Furthermore, growers do not want to encourage additional planting of crops in less favored areas because of an incentive to collect insurance benefits. This problem is a major concern in horticultural crop insurance.

### **Conservation and environmental programs**

Fruit, tree nut and vegetable producers have always been eligible for conservation funds for fallow land, but typically their land is far too valuable to make participation economically feasible. However, the Farm Security and Rural Investment Act of 2002 expanded some environmental programs, and create a new program provided subsidies to growers who undertake environmentally friendly practices on land that remains in production. The Environmental Quality Incentives Program will provide about US\$1.3 billion per year to aid investments that are supposed to yield environmental improvements. About 40% of this money will be available to crop producers, and of that about 25%, or about US\$130 million per year, may go to horticultural crops. These funds are for investment, and are given as matching funds.

An unanswered question is how much they will improve the environment, and how much they are simply a subsidy for investments that farmers would be making anyway.

The new program, the Conservation Security Program, will provide about US\$300 million per year as subsidies for growers using environmentally friendly practices in their production. Since most growers already use such methods in production this program seems to be a direct subsidy payment. The horticultural industry is eligible for these funds and may expect about US\$40 million per year in benefits. Note that even if this is a production subsidy program, this funding is only about 0.15% of farm production value, and the production effects are likely to be negligible.

### **Trade programs**

For many years the United States has operated a program, currently named the Market Access Program (MAP), which provides matching funds for industries and firms that promote their goods in foreign markets. The Farm Security and Rural Investment Act of 2002 expanded the MAP to US\$200 million per year, after ten years of spending less than half that amount. Most of these funds go to the fruit, tree nut and vegetable industries. Funds are used to promote products in trade shows, in-store displays and even media advertising in many markets, especially in Europe and Asia.

The effectiveness of this program has been documented in several case studies, but we do not know how much profit it brings to growers. The funding for this program is quite small relative to crop value, but significant compared to the promotion that industries have undertaken with their own funds.

The Farm Security and Rural Investment Act of 2002 also added a new feature to farm product marketing in the United States that raises major issues for international trade. Under the new law, many products, including perishable fruits and vegetables, will be required to carry a label showing the country of origin. Marketing firms objected to the cost of this provision, and it is clearly designed to discourage imports.

## CONCLUSION

The fruit, tree nut and vegetable industry in the United States is large and diverse. It ranges from the production of frozen French fries for fast food restaurants, to the production of organic fresh vegetables for local farmers' markets. The industry is spread throughout the United States, but California is by far the most important region, and the state with the greatest variety of horticultural crops.

The United States both imports and exports these products, with imports slightly exceeding exports. Many of the imports are for products produced in only limited amounts in the United States (such as banana) or crops that are imported during the off-season (such as table grapes). Nonetheless, many U.S. industries face considerable international competition in the U.S. market.

For the most part, the large U.S. farm subsidy programs do not apply to horticultural crops. The relatively small programs that do exist provide little direct subsidy and have relatively little impact. In the long run, of course, the role of government in research and in border protection against exotic pests is crucial for the health of the industry.

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