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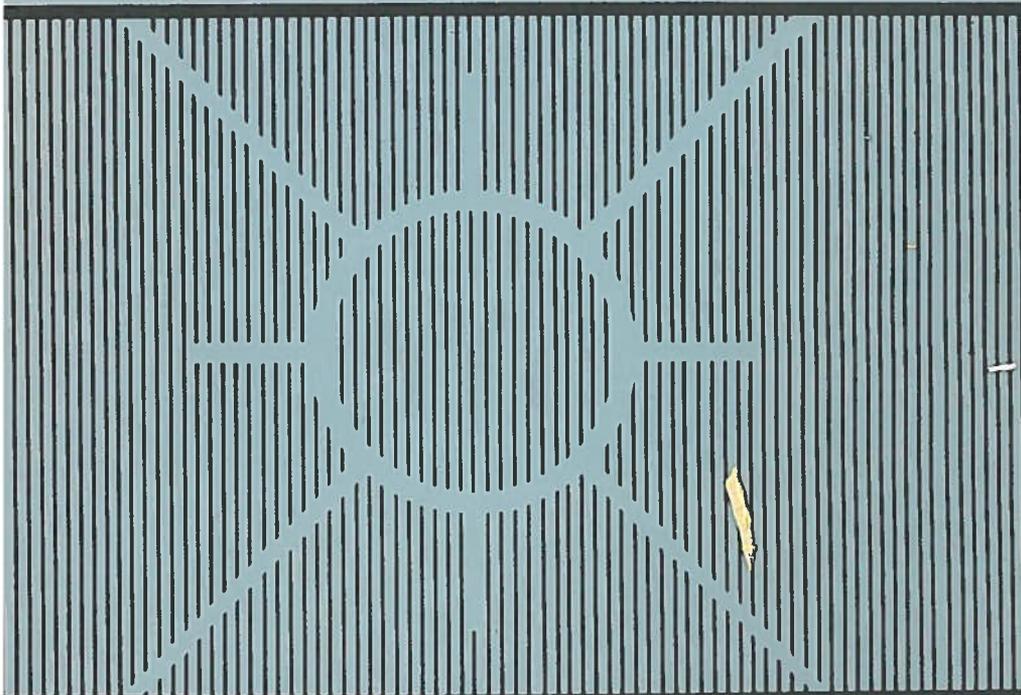
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THE TART CHERRY SUBSECTOR OF U.S. AGRICULTURE: A REVIEW OF ORGANIZATION AND PERFORMANCE



Agricultural Experiment Stations of Alaska, California, Cornell, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, New Mexico, North Dakota, Ohio, South Dakota and Wisconsin.

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Chapter 6

MARKETING PERFORMANCE OF THE TART CHERRY SUBSECTOR

INTRODUCTION

The cherry marketing system includes many different facets. Although in analyzing performance it might be desirable to set up some ideal standard for good performance, this is an almost impossible task. Nevertheless, there may be a number of areas for which we can compare the historic industry performance to that which seems to be possible. If we can identify areas with a substantial gap between actual performance and what is probably possible, this can provide useful guidelines for industry action or policy prescriptions to improve performance.

Performance can be judged from the point of view of a number of different participants such as consumers, growers, processors, manufacturers and retailers. Participants often strive to improve performance relative to their own position. Improved performance from one group's point of view may or may not be consistent with improved performance for the whole system or for other participant groups.

We have tried to analyze performance in a broad sense. Emphasis is given here to those areas in which improved performance from one participant group's point of view is consistent with, or at least does not substantially decrease, performance from the point of view of other participant groups. Those areas where improved performance for one group would be substantially balanced by decreased performance for another group are given less emphasis.

Overall cherry marketing performance is generally good, especially for those aspects which can be controlled, or heavily affected, by commodity-oriented participants in the subsector, namely the growers and processors. There are some opportunities for further improved performance. Most of these opportunities involve economic factors originating primarily with participants who do not regard themselves as part of a "cherry" subsector, since they are quite diversified and/or vertical coordination phenomena involving participants in two or more of the vertical levels in the marketing system.

Some opportunities for possible further involvement in cherry marketing performance will be explored in this chapter. This emphasis should not be construed to mean that cherry market performance is poor. Quite the contrary. There are many areas of generally high performance which are not analyzed in detail in this report. These areas of generally high performance include: (1) a substantial number of highly-efficient growers and processors producing at costs based on progressive technology and at prices during the past two decades which have averaged near 5-7% net return on investments; (2) rapid adoption of significant cost-reducing technologies; (3) production of basic commodity by growers and processors without much advertising nor "new gimmicks" firm marketing; (4) growers and processors undertaking increased functions such as risk bearing, storage, transportation, delivery services, ect. at minimal costs;

(5) subsector response to changing consumer tastes and preferences and (6) subsector adaptation to certain aspects of changing food system ownership patterns and structure such as with food manufacturers, grocery chains and fast-food restaurant chains.

In the discussion below we will look at some central vertical coordination issues and remark on participant responses to these issues in the tart cherry subsector. We will begin by focusing on demand conditions, giving special attention to demand transfer issues such as (1) identifying which subsector participants have the ability to respond to changes in demand conditions, (2) identifying which participants currently bear the responsibility for accommodation to such changes, and (3) indicating the results of the distribution of risk in the demand transfer area. This latter point will be developed by discussion of supply planning issues in the subsector. Attention will be given to investment decisions, short-run fluctuations in supply and to remedial activities. The demand transfer and supply planning dimensions of vertical coordination will be followed by a presentation of product quality issues and some discussion of the risk distribution in the subsector. The total discussion is offered to enhance the understanding of the distribution of risk and control in the tart cherry subsector.

Vertical coordination involves meshing signals in a system. This meshing can be either smooth or rough. Thus, vertical coordination is a concept manifesting gradients. Furthermore, vertical coordination has dimensions of quantity, quality, timing, and location multiplied by participant levels with individual goal functions. This matrix of participant dimensions to vertical coordination suggests both the importance of information and impediments to this flow in a subsector.

For example, a serious and growing challenge for many food commodity subsectors, including cherries, is to achieve adequate vertical coordination when technology requires that the growers and the initial processors must be commodity-oriented whereas the manufacturers and retailers who control consumer access are highly diversified and are not commodity-oriented. This type of problem is particularly noteworthy for tart cherries since the entire production is initially marketed for processing and most is then sold through another set of manufacturing firms such as pie manufacturers. Hence, most cherries must be marketed through two important levels of noncommodity-oriented firms, i.e. manufacturers and retailers.

Some aspects of vertical coordination are especially challenging for tart cherries since this is a tree fruit crop with a very long production time period of 20-30 years. Thus supply capacity adjustments involve some special problems compared with an annual crop.

VERTICAL COORDINATION AND TRANSFER OF DEMAND INFORMATION

Desirable vertical coordination for a tree fruit commodity like tart cherries would involve transmitting information regarding expected consumer demands for 5-10 years or more in the future back to the growers so they could make the necessary investments (or disinvestments) in orchards. This type of information is also needed by freezers and canners regarding processing facilities.

Accurate predictions of this nature are, of course, difficult to make in a rapidly-changing economy like the United States. Those firms closest to the consumer, retailers (both grocery and food service) and food manufacturers, are in a better position to assess the likely future consumer demand phenomena than are growers or initial processors. Since food manufacturers and retailers tend to be fairly large firms, particularly in comparison to growers and initial processors, they are more likely to have capabilities to assess the trends and analyze likely changes relative to consumer demand. Since manufacturers and retailers are not commodity-oriented, however, they have for the most part ignored this kind of coordinating function for commodities.

The lack of an attempt to extend coordinating information back through the system is especially noteworthy in the case of retail grocery firms. Handling up to 15,000-16,000 different items in a store retail grocery firms understandably exhibit little concern about commodities in general, particularly a *minor* commodity like tart cherries. Information which retail grocers could obtain, however, might be quite important in predicting future changes in demand.

Some demand information is available by broad product category from grocery trade publications and from specialized market information firms based on data from grocery wholesaler-retailers. Retailers will probably become a better potential source of information if the Universal Product Code system is more widely adopted in the grocery retailing system.

Despite their position as potential suppliers of consumer demand information, retail grocers have generally adopted a very short-run decision-making framework for predicting consumer demand for different products or commodities. They have generally left the needed longer-term analysis almost completely up to remanufacturers, processors and farm producers. This position is understandable since retailers can readily substitute many other products if consumer demand decreases for a particular item such as a cherry product. Generally, also, retailers do not have trouble getting suppliers of most products to increase their supplies if demand increases. By their action retailers have in effect delegated almost completely the responsibility for analyzing, predicting and reflecting medium to long-run consumer demand back through the system to their suppliers which are manufacturers and processors. This poses a problem in the cherry marketing system since processors and growers have few capabilities to perform this vertical coordination function, and food manufacturers have the capabilities but are not inclined to do this for a minor commodity such as cherries.

Food service retailers have traditionally also done very little to predict future market conditions for a commodity and to coordinate back through the system information on what consumers want relative to commodities, especially minor ones like cherries. Some kinds of firms, however, do a significant amount of this kind of coordinating activity. For example, some fast-food chains, particularly those that emphasize and specialize in a limited menu selection, are interested in developing long-term dependable supply sources. Hence, they are doing more coordinating through information, and in some cases, through long-term contracts, for certain food ingredients. Some information is also available from

trade associations of food service retailers regarding long-term trends and predictions for certain kinds of commodities.

Although perhaps to a somewhat lesser degree than retail grocers, food service retailers have also left the long-term coordinating mechanism of consumer demand assessment primarily up to processor-suppliers. Most food service firms have done this, in part, because they can fairly easily substitute different food items for one another in their menu offerings and product lines if consumer demand and/or the supply situation changes radically. Again, this is particularly the case for the minor commodities such as cherries.

Grocery firms' operating procedures can also influence demand for cherries such as through procurement and merchandising practices, shelving policies and pricing decisions. Grocery firms are not, however, likely to use their ability to increase demand for low-volume items like cherries. In fact, just the opposite is likely to be the long-term trend for cherries.

Large food manufacturers have the ability to perform a major coordinating role through assessing changing consumer demands and modifying and shaping consumer preferences towards products containing cherries. Both of these kinds of coordinating activities could be very beneficial to a commodity industry such as cherries.

Although large food manufacturing firms could potentially be important in vertical coordination for cherries, their performance on this has not been especially high. Large food manufacturing companies are often highly diversified firms with many product lines. Many are also divisions of even more highly diversified conglomerates. They are strongly oriented to whatever product lines will generate the most sales, profits and growth for their firm or division. These firms highly regard the flexibility to shift to products which are most profitable. To have an allegiance to a certain *commodity* is generally regarded as quite unwise from their perspective.

When food manufacturers drop product lines which are "poor performers" for the company and shift to new products, including cherries in the product lines is of little or no importance *per se* to the company's decisions. However, whether cherries are included or excluded from the manufacturers' product lines can be very important to the cherry growers and processors—either substantially increasing or seriously curtailing cherry demand.

The food manufacturers' perspective is generally one of not needing to be concerned about coordinating activities for a commodity like cherries. Given their orientation, they can understandably ask, "Why should we?" They are generally well protected from the need to play a major role in coordinating a minor commodity like cherries. However, from the cherry marketing system point of view, when large food manufacturers take this position, a number of key aspects of vertical coordination are essentially not done or are done poorly.

VERTICAL COORDINATION AND SUPPLY PLANNING

Long-Term Orchard Investment Decisions

One result of retailers and manufacturers performing a weak vertical coordination role for a commodity like cherries is that grower-investors have inadequate information. Partly because available information is scanty, growers take a high degree of risk when they invest in highly-specialized orchards which last 20-30 years.

If growers make substantial investments in cherry orchards and/or cherry processing plants only to discover much later that market demand is inadequate or that there is an oversupply, there will be substantial wasted resources. The excessive, but inexpensive, orchards will tend to be gradually removed in response to low prices with substantial losses and waste. Excess processing plants can sometimes be converted to other uses, but usually there is substantial loss of equipment investments as well as part of the building investment.

If growers underinvest in orchards, higher prices in later years will indicate to them that more cherries are needed, but manufacturers and consumers will have to wait many years to get the additional supplies and in the interim pay high prices for cherries. With such a situation, it is likely that food manufacturers will use their demand-expansion abilities to increase consumer demands for products other than cherries. This can substantially decrease long-run demand for cherries.

The result is that system participants, who are in some respects well suited to supplying information needed for the long-run coordination job, do little or nothing in this area. To a very large degree, the system relies upon the growers to bear all of the long-run risks of making the correct orchard investment decisions. Both the coordination responsibility and the risks are essentially placed on the grower. For information on long-run market trends and situations, many individual growers are in one of the poorest positions of all system participants to be knowledgeable and hence to make investment decisions that result in high long-run performance.

Considering the above obstacles to desirable performance for long-run coordination of supply and demand, the cherry industry's performance in this regard seems remarkably good. The long-run supply *capabilities* (bearing orchard capacity) seem to have been fairly stable, although the situation is complicated by the wide short-run *fluctuations* in supply. It appears that since the mid-1960s cherry productive capacity has remained fairly stable, although declining gradually, and is apparent fairly comparable with long-run market demand. Cherry supplies have been somewhat on the "short" side during much of the mid-to-late 1970s, but this situation has been heavily influenced by adverse weather conditions.

An example of poor performance and misadjustments in productive capacity was evidenced during the period 1961-1965 when the cherry industry had become overinvested in orchard productive capacity relative to market demand. This occurred because of the surge of plantings in the early-to-mid 1950s in response to earlier profitable prices. During four large crops in five years (1961, 1962, 1964 and 1965), very low prices resulted. These low prices caused a number of orchards to be removed. Since the mid-1960s, despite the annual variations in crop due to

weather, cherry orchard productive capacity has been fairly stable with a gradual decline. Long-run demand also appears to be fairly stable.

Looking to the future, it appears that the cherry industry may again have a problem of poor performance in coordinating long-run supply and demand. This may occur for two major reasons.

First, a large number of existing orchards are approaching "retirement age." This is particularly significant since an orchard's average productive age is shorter with mechanical harvesting than previously with the historical hand harvesting. Therefore, an unusually large number of orchards will need to be removed and replaced in the next few years. Thus, to maintain a stable productive capacity, many new plantings will be need to be made in the next few years.

Many young trees have been planted in recent years — especially in certain geographic regions. These have been encouraged by high prices to growers in 1973, 1974, 1976, 1977 and especially in 1978 and 1979. Although substantial new plantings will be needed to replace the old orchards, growers might in the future overplant new acreage — resulting in misused resources, low returns on investment and substantial wastes if orchards must be removed prematurely. If this occurs, the undesirable results will be realized during the late 1980s.

Second, performance could be poor in the opposite manner, although this does not appear likely in the near future. If growers were to not plant sufficient orchards, in a few years there could be insufficient production to fill the fairly stable market demand. In that case, of course, cherry prices would likely increase still further, tending to cause greater investments in cherry orchards. This would move the system toward more cherry production, but the time lag in growing the orchards to productive age means the industry would be underproducing for a number of years. That is, when the cherry industry responds to high prices with more plantings, the resulting increase in production does not occur for 8-10 years, by which time the demand for cherries may drop substantially and be inadequate to permit sales of the increased production at prices which will cover all costs.

Widely Fluctuating Supplies and Prices

Many performance aspects of the tart cherry subsector are related to the unusually wide fluctuations in cherry supplies and prices (Chapter 3). This market fluctuation situation is one of the most important problem areas with potential for improved market performance.

This problem area adversely affects performance in many ways. While some have been discussed earlier, below is a summary of some of the undesirable and desirable performance results arising because of large supply and price fluctuations as they affect different participating groups. The lists will be followed by a discussion of some remedial activities focusing first on the supply side and then on the demand side of the subsectors.

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Undesirable Results of Wide Fluctuations:

For Consumers:

- Often must pay large price increases in short-crop years
- Some cherry products may not be available at any price in short-crop years—especially in certain food service markets and grocery departments
- May not have retail price decreases comparable to grower price decreases in large-crop years
- Some potential new products not developed because of the great instability.

For Retailers:

- Large fluctuations require a number of changes and add somewhat to procurement risks and difficulties—especially in short-crop years
- May cause price and profit subsidization of cherries by other products in high-price years, especially for food service retailers
- Price may be substantially below grower's average total cost in large-crop years

For Manufacturers:

- High risks for price discovery and procurement timing
- Difficult to plan for effective marketing and to benefit from advertising or merchandising for cherry products
- New cherry product development is especially risky and has less profit potential than with a stable ingredient
- May cause price and profit subsidization for cherries in short-crop years
- May lead to high overhead costs in short-crop years if a firm relies heavily on cherries as a major part of their business

For Processors (Freezers and Canners):

- High risks for price discovery of finished product and raw cherries
- High risks for timing of sales and carrying inventory
- High overhead costs in short-crop years
- Instability and high risks lead to difficulties in obtaining operational finances
- Difficult to finance needed investment capital for technological improvement and facilities
- Makes cherry market expansion and product development under their brands risky and with reduced profit potential
- Substantially reduces long-run market expansion possibilities for cherries as a commodity, for export as well as U.S. markets
- Low-price years for growers provide a major reason for the development of grower bargaining and Michigan's unique law strengthening grower bargaining—both of which can raise potential risks to processors

For Growers:

- High risks; from low prices in large-crop years and small sales volume in short-crop years
- Insufficient processor capacity in large-crop years – leads to wasted production
- Price may be substantially below grower's average total cost in large-crop years
- High overhead costs per pound in short-crop years
- Substantially reduces long-run market expansion possibilities for cherries

Desirable Results of Fluctuating Supplies:

High prices and profits to growers in the short-crop, high-price years are considered highly desirable performance by many growers. This is especially so for those growers who have superior orchard sites so that they have large crops in high-price years. In addition, the *possibility* of a grower making large profits through a combination of a high yield plus high prices (because of short industrywide supplies) is considered desirable by many growers – even by some growers who rarely achieve this combination. This is sometimes referred to as growers' "eternal optimism."

The high-risk situation for both cherry growers and processors is regarded as desirable performance by some. Those growers and processors who have the financial ability to bear the high risks associated with large fluctuations in supplies and prices may benefit from these risks, since high risks probably discourage entry of new firms who are not well prepared to bear those risks. Participants who view this high-risk situation as desirable are usually the firms which have sufficient financing to survive temporary periods of low prices or crop losses due to weather. Some of these participants regard the high risks as desirable to "weed out the weak sisters." It is interesting to note that a common attitude is as follows: If the "other" person is the one to be "weeded out," this is considered *desirable* performance, whereas the high risks are considered *undesirable* if the evaluator is himself the grower or firm which cannot survive.

Prices to processors (and grower prices) do reflect to a substantial degree the relative scarcity or availability of cherries in a given year. High prices in years of short supplies help to ration the scarce supplies to those buyers who need cherries the most. Lower prices in years of larger supplies signal, and enable, a wider array of different cherry buyers and users to purchase some of these larger supplies. Cherry prices seem to be fairly effective in reflecting changes in available supplies from year to year.

Pricing effectiveness with widely fluctuating annual supplies is complicated by the fact that temporary high prices in a short-crop year may cause certain kinds of firms to significantly reduce their demand for cherries for a period of several years following a short cherry crop with accompanying high prices. For example, high prices cause some convenience dessert manufacturers to drop cherries from their product lines. High prices also may cause some managers of limited-menu restaurant chains to remove cherry dessert items from their offerings. Food manufacturers may eliminate cherry products from their brand advertising,

merchandising and demand expansion programs for several years as the result of a high-price cherry year.

Because of the above phenomena, a high-price cherry year, caused by temporary short supplies, can cause important firms in the marketing system to make longer-run demand-reducing decisions which will not be quickly reversed when the cherry industry rebounds with a large crop and low prices. Because of this slow reversibility of certain demand aspects related to large market fluctuations, the system performance is lacking in reflecting latent consumer demand.

Investment in Processing Capacity

A problem partially related to the fluctuating supply situation has been one of inadequate processing capacity in some years to handle the highly perishable crop during the harvest-processing season which lasts only a few weeks. Because of the wide annual fluctuation in supplies and the high risks to processors, among other factors, there is a tendency, especially among proprietary processors, to invest in only enough processing capacity to handle moderately large crops. A result is that in some years there is not enough aggregate processing capacity to handle exceptionally large crops. This situation exists because large crops occur on average only about one year in four. If adequate processing capacity is developed to handle the largest crops, the facilities will be underutilized in many years, especially during the very short-crop years.

The problem of inadequate processing capacity was magnified in the late 1960s and early 1970s because of a combination of: (1) mechanical harvesting adoption, (2) new strict environmental regulations which forced some processors out of business, and (3) high risks and low net returns to processors. The result was a loss of part of the crop in certain years.

When the tart cherry industry switched almost completely to mechanical harvesting, the harvesting capacity increased greatly. The result was that cherries could be harvested much faster than they could be processed.

During approximately the same period that the cherry industry was adopting mechanical harvesting, some processors had to meet new environmental protection regulations through substantial investments in waste-disposal facilities at their existing processing plants. Other processors could not meet the new environmental regulations at their previous locations and were thus faced with the need to build new plants. Some processors did build new plants, but other processors facing this situation could not afford the needed new investment and went out of business.

As the result of the several above-mentioned factors operating during the same period, processing capacity in the industry declined at a time when mechanical harvesting was increasing the need for it. This resulted in some significant crop losses during large-crop years, such as 1972. The problem of inadequate processing capacity was clearly recognized as undesirable performance on the part of the cherry subsector. It was also the type of performance problem that the commodity-oriented growers and processors could deal with through remedial actions of their own (without needing to have related changes by either manufacturers or retailers).

Aggregate processing capacity was enlarged through investments in a number of new and expanded processing plants. An increasing amount of expansion in plant capacity is grower-owned. Some large growers built their own processing facilities on their farms. In some cases these processing facilities are used to process only the grower's own crop, while in other cases these plants are used for the cherry crops of several local growers. In certain instances, growers purchased an existing proprietary processing plant and formed a cooperative. In other cases growers built a new plant with a new processing cooperative. Some existing cooperatives substantially expanded their processing capacity. Certain proprietary processors also relocated their plants and expanded their processing capacity. On an aggregate, industry-wide basis, plant capacity increased with the proportion of proprietary-owned plant capacity decreasing and with a shift to grower-owned plants, including some cooperatives.

In addition to the investments made in more processing plant capacity, the problem has been eased somewhat by a gradual downward trend in orchard production capacity during the 1970s. This factor alone, however, would not have been sufficient to solve the inadequate plant capacity problem in large-crop years.

The industry has also achieved efficient use of existing processing capacity. The development and widespread adoption of chemical looseners, enabling mechanical harvesting to start somewhat earlier than would otherwise have been possible, have permitted a somewhat longer processing season. Techniques for effectively trucking mechanically harvested cherries from one region to another were also improved so that some cherries can be transported from late harvest regions to other regions and hence lengthen the processing season of certain plants.

At the present time, the industry seems to have sufficient processing capacity to handle most cherry crop sizes even with mechanical harvesting. The main contribution to the solution has been grower investment in more processing facilities. Growers are willing to invest in processing facilities, even accepting a relatively low rate of return on the processing investments, in part to protect their investments in orchards and mechanical harvesting equipment. In the future, industry's performance in regard to processing plant capacity will be put to a more critical test, since overall crop production is expected to increase somewhat during the 1980s from recent new plantings. It appears, however, that growers will likely make further investments, if needed, for adequate processing capacity, since growers have shown a willingness to take high risks from processing and low returns on processing investments, if they must, to protect the earning potential from their farm operations.

SOME ACTIVITIES FOR REDUCING MARKET FLUCTUATIONS

Considering the cherry subsector as a whole, the evidence strongly indicates that overall performance could be improved by reducing the wide fluctuations in supplies and prices. Most cherry industry leaders seem to feel that some reduction in the wide supply fluctuations would be desirable, despite the fact that some risk-takers regard the situation as desirable.

A number of actions have been considered and/or implemented to some degree in the tart cherry subsector to stabilize supplies and prices somewhat and thus to improve performance. One of the most important programs used in recent years to stabilize supplies is an industry-wide storage pool operated under a federal marketing order. This is discussed at some length in Chapter 7. Other actions in the cherry subsector to stabilize supplies include:

1. Some, but limited, storage by individual processors and/or manufacturers
2. A limited amount of storage by individual growers
3. Bargaining association activities to provide somewhat greater stability of prices (Discussed in Chapter 8)

High prices in short-crop years provide substantial incentives for growers to grow more cherries in those years and for sellers to sell greater quantities in those years. However, because of technological and biological factors related to cherry growing, there is little that the grower can do to increase his orchard's *production* from one year to the next. Storage from large-supply years so that more supplies will be available for sale in short-supply, high-price years is technically and economically feasible. Price increases from large-supply to short-supply years are typically substantially greater than the storage costs.

In the longer run, growers can respond to high price experiences in short-crop years by planting cherries primarily on frost-free sites which will tend to provide more cherries in short-crop years. In addition, high prices in short-crop years provide an incentive for the development of improved technology such as new varieties and strains which are less susceptible to frost damage. These may be able to be developed and implemented over a long period of years. Although research efforts are being devoted to this goal, new technology has not yet been developed and widely implemented in the industry to significantly reduce the wide fluctuation problem.

Individual processors store small amounts of cherries from large-crop to short-crop years. However, the amount processors store intentionally is quite small. The standard strategy of cherry processors is to sell each year's pack during the marketing year for that crop and to be sold-out before the next crop is harvested. Processors generally feel that the risks are too high to warrant storage as a common practice for the individual firm.

Certain growers have done a small amount of storage from large-crop to short-crop years. The grower may have cherries custom processed and then stored until a short-supply year. The extent of this grower storage has in the past been quite limited.

Growers who have vertically integrated into ownership of processing facilities (either through an on-farm plant or through a cooperative) have in the last few years become increasingly interested in cherry storage either as an individual grower or collectively through their cooperative. Grower interest in this type of storage is due in part to increased awareness of the potential economic gains from storage through the federal marketing order experiences. Some growers and grower-processors as individuals are considering storage to supplement the industrywide storage program under the marketing order.

The potential effectiveness of a storage strategy for industry performance, and for profits to the individual owners of storage stocks, will depend in part upon how the federal marketing order storage program is operated in the future. There would be considerable potential economic gains from individual grower storage if the marketing order storage program is operated in a conservative manner with relatively small volumes in the storage pool. Strong use of the marketing order storage program will reduce the potential gains from individual grower storage.

Grower bargaining has been used to raise somewhat the lowest prices received by growers, especially in the large-crop years. This can be done by undertaking market information and price influencing activities, by reducing risks to processors so that a processor will not have to discount for pricing risk as much as he would otherwise, and perhaps by establishing a position of substantial market power through the bargaining association. Bargaining associations have probably been moderately successful in raising the lowest prices especially in years of moderately large crops. Their success has probably been less significant with very large crops, since they face greater difficulties in achieving substantially higher prices when crops are quite large.

Bargaining associations in the cherry industry have also followed a general strategy of moderated price goals in short-crop years. In this regard, observance of behavior indicates that the bargaining associations could probably have obtained higher prices in some short-crop years than they actually sought if they had chosen a short-run price-maximizing strategy. Competitive processor demand for the short supplies in many short-crop years has resulted in a bidding-up of the cherry prices to levels higher than the bargaining association sought in their initial minimum price goals. Thus it is unclear to what magnitude the bargaining association's strategy and activities actually resulted in lower prices than would otherwise have occurred in those high-priced years. The evidence is, however, that bargaining association strategy has had some desirable impact on performance, although the magnitude of this impact in regard to price fluctuation is unclear. Generally, the bargaining associations have followed a long-run pricing strategy which would be expected to somewhat reduce annual price fluctuations both because of somewhat higher prices in large-crop years and somewhat moderated prices in short-crop years. To the extent that they have achieved this, such a strategy increases performance in regard to a major problem in the cherry industry.

COMMODITY DEMAND EXPANSION, PROMOTION, AND MARKET DEVELOPMENT

The fact that cherries are a minor commodity marketed in a U.S. food system which is heavily influenced by large and effective advertising and demand expansion activities of food manufacturing companies with strong consumer brands poses special challenges for cherry subsector demand expansion. This is particularly so in retail grocery markets. Cherries must compete for consumer access through the limited grocery store shelf space with thousands of other food and nonfood items. Many items competing for consumer access in the grocery store have well-established consumer brands supported by large corporate media adver-

tising expenditures equal to as much as \$100 million annually. Within this competitive environment, the demand expansion goals for cherries involve aggregate expenditures by industry promotional organizations and processors of approximately \$1 to \$1.5 million at maximum.

Faced with formidable competition from large brand-owning firms and with the imbalance of market expansion funds, some ask the questions, "Why does the cherry industry even try to undertake demand expansion?" If the alternative implied by this question were followed and cherry demand expansion efforts were discontinued, much of the demand for cherries in retail grocery stores would trend downward, probably eventually reaching the point of nonexistence for many cherry products. In fact, this has happened in the case of canned cherries and may be happening with some other minor fruit products such as canned purple plums. Thus, from the point of view of growers and processors who have specialized long-term investments in orchards and plants, it is very much in the best interest of this subsector to have some demand-expansion activities which at least will strive to maintain present demand. In fact, with the short supply situation in recent years much of the cherry industry's demand-influencing activities can be characterized more as demand *maintenance* rather than demand *expansion*.

Consumer interests probably are well served by the fairly small demand expansion program in the cherry subsector in that this helps assure a selection of different cherry products available, and thus probably adding to consumer welfare. On the other hand, in a broad context, the argument could be made with some validity that if there were no cherries available, consumer interests would not be greatly affected since this minor commodity is not a necessity. Essentially, however, that is also the case for thousands of food items sold in U.S. grocery stores today.

If demand expansion for the cherry subsector is going to be carried on, a key question is: "Who, or what participant group, should carry out these functions?" Because nationally-recognized food firms have large advertising and demand expansion budgets in comparison to the very small budget potential which can be generated by the cherry industry itself, cherry industry promotional organizations have to a large extent designed their programs to stimulate and influence the branded food manufacturing firms to use part of their large demand expansion budgets for cherry products sold under these well-established brands. Thus, the cherry industry's generic demand expansion program has adopted to a substantial degree a strategy of working with and through the large brand advertisers, rather than trying to compete with them. Given the relatively small financial resources of the cherry industry, this is a logical and cost-effective approach. Another desirable result of this approach is that the cherry promotional organizations attempt to improve information to food manufacturers, and to some extent retailers, regarding the cherry situation, changing market conditions for cherries, and ideas on how to use cherries in ways consistent with the needs of manufacturers and retailers. Cherry promotional organizations have also acted to expand cherry usage through new markets, worked with manufacturers on new product development and stimulated cherry usage for nondessert purposes. The cherry promotional organizations have assisted in cherry export market development.

Financial support for generic cherry demand expansion programs is based on grower contributions from each major state, achieved through a series of state promotional organizations supported by state marketing orders so that all growers (except for very small operations) help finance this industry demand program. To a substantial degree, although not completely, the various cherry states in turn have contributed demand expansion funds to a national organization. Thus, to a large extent, each state has not promoted cherries by itself and thus has not tried to compete with other states in demand expansion for the same commodity. This national approach enhances a coordinated program and a "critical mass" of funding is more likely to be obtained. On the other hand, the distribution of funds from some states between their own state program and that of the National Red Cherry Institute is a point of controversy in some quarters of this subsector. With the growth of Utah's cherry production, some in the industry believe that Utah should also be included in financing the tart cherry demand-expansion activities, although in the past Utah has not been formally linked with this industry effort.

Another controversial issue concerns the fact processors do not contribute funds to the generic demand-expansion program. Some growers are concerned about this since successful demand expansion improves demand for cherry processing services as well as for the growers' cherries. Some processors argue that they already do their share of the cherry demand expansion with their brand promotions, advertising, and other cherry marketing activities for their firm. The increase in vertical integration into processing by growers will likely reduce the concern over this issue in the future.

Overall, cherry demand expansion activities probably have contributed significantly to maintaining cherry demand and use, and, in periods of adequate supplies, to some demand expansion. The program has also probably aided in the continued availability of a number of consumer cherry products for added variety of consumer choice. Effects of the cherry demand-expansion activities on retail prices of cherry products are in all probability inconsequential.

The main cherry demand-expansion organizations periodically undertake comprehensive evaluations of their program and analyze alternatives to further improve their effectiveness. Challenges will remain for effective marketing of this minor commodity in a food system dominated by other products with strong brand advertising and marketing. Although improvements can be expected in the future, further challenges will continue to be posed by (1) relatively small demand-expansion budgets, (2) a tendency for large fluctuations in crop size.

NEW CHERRY PRODUCTS AND ADAPTIBILITY TO CHANGING CONSUMER PREFERENCES

The tart cherry industry has had relatively few new products successfully developed and marketed in comparison to the apparent potential, and in comparison to a competing commodity industry like apples. However there have been a few important new cherry products. Performance regarding new product development is especially impacted by decisions of large food manufacturing firms with strong brands and product development and advertising capabilities.

Among the factors influencing the number of new cherry products are: (a) the fluctuating supply and price situation, (b) risk to the firms, (c) the market structure of manufacturers, retailers and processors, (d) the financial barriers to effective new product advertising, (e) the strong noncommodity orientations of large manufacturers, and (f) cherry product characteristics in relation to basic consumer desires and alternative new products. The most important factors contributing to low performance in new cherry product development seem to be (a) the widely fluctuating supply situation which discourages large manufacturers from using their market development abilities for cherry products and (b) the inability of most cherry-oriented firms to advertise and to undertake the set of marketing and merchandising activities necessary to build an adequate volume demand for new cherry products.

The disadvantages of having relatively few new cherry products include: (1) for consumers, a reduced variety for consumer choice, and (2) for growers and processors, less potential for cherry market expansion. This is a particularly important factor for growers and processors since technology and the nature of their business require them to make highly specialized investments for cherries only.

Although the tart cherry industry has had relatively few new products developed, there have been some. Certain food manufacturers, including frozen pie manufacturers and companies producing frozen and packaged desserts, have developed and successfully marketed new products using cherries. There have been a number of other attempts by manufacturers and processors to develop new cherry products, but the products did not obtain adequate sales volume to gain a continuing position on grocery store shelves.

Although not a recent development, cherry pie filling has become a highly successful, relatively new product of the cherry industry. Cherry pie filling, a semi-convenient product of desirable quality, has to a great degree replaced canned water-pack tart cherries in most markets. Pie filling has apparently served the needs of consumers more satisfactorily than canned cherries. Pie filling also helps bakeries reduce their labor costs somewhat.

Technology appears to be available to effectively produce dried cherries. Production and marketing of dried cherries would: (a) lower storage costs, thus aiding the stability of market supplies, (b) fit the needs of certain food manufacturers and bakers, and (c) meet the apparent high demand of some consumers for dried cherries. Despite the favorable prospects, the industry has not overcome the remaining obstacles to producing dried cherries on a volume basis. The disadvantages of not marketing dried cherries include:

- a. For all participants the problems associated with supply and price instability are magnified.
- b. For consumers certain products such as the dried cherries themselves are not available.
- c. For manufacturers and consumers an apparent opportunity for cheaper cherries in short-crop years is being foregone.
- d. For growers and procesors apparent opportunities for substantial cherry market expansion are not being exploited.

Some technological research has been done on dried cherry production techniques. Preliminary market tests have been made of consumer preferences for dried cherries [20], and certain processors have made trial packs of dried cherries.

Despite the activities aimed at developing a successful dried cherry, some key obstacles remain. These obstacles include: (1) a shortage of raw product supplies in short-crop years; (2) a processing capacity problem during the short processing season, especially in large-crop years; (3) high processing costs for dried cherries; (4) technical challenges with product stickiness and maintaining desirable color; and (5) a need to maintain low moisture content during storage and marketing. Additional efforts by the industry to overcome these obstacles may be feasible, and if successful, could significantly improve performance in this regard.

The cherry industry has been successful in encouraging certain key firms in the limited-menu restaurant business (mostly chains) to use cherry products. Thus some of these restaurant firms have cherry fried pie desserts, cherry cheese cake and cherry sauces on their limited menus. This is especially important since limited-menu chains are a growth segment of the food business. Although the limited-menu items are not exactly new products, adapting cherries to a rapid-growth segment's needs is an important strategy incorporating certain aspects of new product development or modification.

Development of new products using cherries would be greatly facilitated by more stable supplies and prices from year to year. The formation of the federal marketing order storage program is a desirable step aimed at this goal. In the future, greater use of this storage program to stabilize cherry supplies and prices can potentially improve performance further in regard to new products.

Cooperative-corporation vertical joint ventures have the potential to facilitate expanding development of new cherry products. If a cherry supplying cooperative enters such a joint venture with a food marketing corporation with a strong brand and abilities to develop new cherry products, the joint venture can improve performance for both parties and for the overall cherry subsector in regard to new product development. Some vertical joint ventures are now operating in the cherry industry. Others have been tried, but no longer exist. The actual improvement in performance on new product development, in comparison to the potential from joint ventures, depends upon the amount of effort the food marketing corporation in the joint venture devotes to this.

Another possibility to improve new cherry product development would be for a cherry cooperative to buy a food manufacturing firm which emphasizes desserts such as pies. This would be particularly useful to the cherry growers and for new cherry product development, especially if the firm has a strong brand position. This alternative has been considered by some grower leaders, but a major obstacle is the large amount of capital involved to purchase a strong food marketing firm with a significant consumer franchise position and with the financial abilities to bear the high risks of new product development and introduction. This type of forward vertical integration may become an important industry feature in the future as evidenced by such a recent acquisition in the Michigan industry.

Tart cherries have been used as an ingredient in sweetened desserts such as pies, pastries, cobbler and cheese cake. Although these major cherry uses have been consistent with traditional consumer tastes and preferences, growing numbers of consumers are showing preferences for lower calorie foods including fewer desserts. Since tart cherries are sold primarily as sweetened pies and desserts, this suggests possibilities for improved performance through different product offerings to better meet changing consumer tastes.

Disadvantages of marketing cherries primarily in high calorie desserts include:

- a. Some consumers cannot find cherries in the kinds of products and forms desired.
- b. For growers and processors, apparently some opportunities for market expansion are being foregone.

In recent years the National Red Cherry Institute has made some efforts to promote cherry usage other than for desserts. Activities to broaden the use of cherries, especially among food service firms, have emphasized their highly colorful nature. Some success has been achieved in using cherries as a garnish sauce with meat as well as cherry juice and fruit drinks. Marketing some cherries in the form of juice is consistent with consumer preference trends for increased fruit juice consumption. The industry has recently made some special plantings especially for juice. The potential for future expansion of juice markets would likely be enhanced with success in stabilizing market supply fluctuation.

In a view of consumer trends toward more calorie-conscious nutritional goals, continued activities by the cherry industry to expand new non-dessert uses are probably desirable for improved performance. The industry generic promotional organizations will probably continue to direct some of their efforts toward this goal.

CONTAINER ISSUES

Studies have shown that consumers prefer canned cherries in No. 2 (21 oz.) cans whereas the cherry industry provides canned cherries in No. 303 (16 oz.) cans. Factors contributing to this undesirable performance are: (1) processing firms compete strongly on a price basis; (2) consumers are unable to notice the difference in container size between a No. 2 and a No. 303 can; (3) grocery buyers use of oligopsony power to pay the lowest possible prices; and (4) consumer-size canned cherries are of such minor importance they do not warrant industry (supplier) action to improve the performance situation. (Consumer-size canned cherries now comprise only 6% of the total cherry pack.)

This is an interesting case study which shows how a high degree of competition resulted in somewhat undesirable performance. Canned cherries for consumer use were packed a number of years ago in No. 2 (21 oz.) cans, providing a desirable amount of cherries for one pie. In the mid-1950s, some processors discovered that to consumers a No. 303 (16 oz.) can was nearly indistinguishable from the No. 2 can. Therefore, these processors began to pack No. 303 cans which they could sell at a lower price than their competitors who were still marketing the larger No. 2 cans.

Apparently most consumers based their selections heavily on price, not realizing the difference in can volume. This situation was accentuated by grocery store specials only on the lower-priced No. 303 cans. Sales of the No. 303 cans increased at the expense of No. 2 can sales. Other processors found that they had to switch to the smaller can to remain price competitive when selling to grocery firms. Hence, after a transition period, all tart cherry canners switched to packing consumer-size cherries in the smaller No. 303 cans. This was so even though the 16 ounces in a No. 303 can was inadequate for a pie and consumers complained about this. After the industry switch to No. 303 cans price competition eroded whatever additional profits the first firms had made and the consumers could only buy a less desirable size can.

The undesired results of the container size situation include:

- a. For consumers, canned cherries are provided only in a smaller size container than most consumers prefer. There is no *choice* of canned container sizes being offered to consumers.
- b. Container costs per ounce of cherries are somewhat higher than with a larger size can.
- c. For processors and growers, apparently a smaller volume of cherries is being purchased by consumers than would be the case if canned cherries were offered in larger cans.

In contrast to canned cherries, cherry pie filling is sold primarily in the more desirable size No. 2 can (21 oz.). Recently there has also been an increasing amount of cherry pie filling sold in the even larger No. 2-1/2 size can. This is apparently consistent with consumer choice for a larger can. Thus performance regarding can size for pie filling has been desirable and superior to the performance for canned cherries.

Since pie filling is now a substantially more important cherry product than are canned cherries, in an overall perspective the desirable performance for pie filling is much more important than the undesirable, but minor, situation for canned cherries. This is especially so since there is long-term downward trend in demand for canned cherries, but a stable to increasing demand trend for cherry pie filling.

A few years ago when canned cherries were sufficiently important to warrant attention by the canners, the canners could have accomplished a change to the No. 2 can by collectively deciding to pack only in the No. 2 can. At that time, a major obstacle to this action was processors' fears of antitrust action if they were to agree jointly to undertake this change. Thus, this appears to be an example where antitrust laws, which are designed to aid the consumer, have actually resulted in reduced performance in regard to consumer satisfaction.

A change to the more desirable can size could probably still be accomplished if the few remaining packers of consumer-size canned cherries were to decide to pack only the No. 2 can and discontinue the No. 303 can. Alternatively, if the canned cherry buyers (mostly private label) were to specify that packers should pack the product only in No. 2 cans, the buyers could fairly easily facilitate an industry switch to the more desirable can size. However, the grocery retailers, and, to a somewhat lesser extent, the suppliers both view canned cherries as a minor product. Hence they are not strongly interested in pursuing an action program to change a situation which they view as a minor problem.

The standard container for frozen cherries, which is the most important industry pack, is the 30-pound tin, which is an expensive item, especially since it is used primarily as a nonreturnable container. The 30-pound tin also involves higher labor costs than certain other larger containers for industrial uses. A substantial potential appears to exist for lower frozen cherry container costs, either with (a) new containers involving lower initial costs, or (b) containers which are effectively returnable to the freezers and, hence, usable a number of times. Some possibilities might include cardboard or fiberboard containers, reusable barrels, tote bins, and/or plastic containers.

Factors contributing to the continued use of the expensive 30-pound tin include: (1) the sales flexibility with the tin to many different kinds of user firms, some of which could not use certain other containers; and (2) the 30-pound tin's facility for efficient stacking in storage. There is also a strong tendency to pack in *new* 30-pound tins which are used only once. Factors which contribute to the nearly exclusive use of new tins include: (1) FDA rules which prohibit the reuse of 30-pound tins without a plastic liner, (2) the expense and difficulties involved in returning 30-pound tins from manufacturers and bakeries back to the freezer-processors; and (3) the practice of packing most frozen cherries with sugar which adds to the package requirements to prevent sugar and juice leakage.

Costs to the processors for containers are higher than they may need to be. Therefore, costs of cherries to manufacturers, retailers and consumers may be higher than needed. If container costs can be lowered significantly, cherry costs to manufacturers, retailers and consumers could be lowered and/or price to growers could be raised and/or profits to intermediate firms like processors or manufacturers could be increased somewhat. A combination of these cost/price adjustments might actually result, although it is not clear who would get the final benefits from the adoption of a cheaper container.

Although most frozen cherries are packed in the expensive 30-pound tins, the industry has made some steps toward improvement. A portion of the pack is now in other containers, some of which involve lower costs. Some large users of frozen cherries have initial processors pack their cherries into large drums with a plastic liner. The drums are reusable and provide a lower cost package than the nonreturnable 30-pound tin. Because many buyers cannot use the drums, the processor-suppliers essentially need a prepacking contract in order to take the risk of packing in this unusual container. If, in the future, a high percentage of the frozen cherry users could handle drums, it might become feasible for the freezers to use drums as a more standard container, thus reducing container costs somewhat.

Some frozen cherries, particularly IQF (individually quick frozen) cherries without sugar, are now packed in cardboard box containers with a plastic liner. This container is used mostly for export since these buyers desire cherries without sugar. Since there is no sugar syrup, the package requirements to avoid leakage are not as exacting as with the standard cherry sugar pack which is commonly packed in the 30-pound tin.

Processors are actively seeking a satisfactory new container which will reduce container costs. Such a container needs to fit the requirements of processors, manufacturers and storage operators.

Recently a limited volume of frozen cherries have been packed in fiberboard 30-pound containers which are somewhat less expensive than the 30-pound tins. Some in the industry believe that the fiberboard container will prove to fit the various container requirements and be a significant improvement for the container cost situation.

Continued efforts for analysis and research on new containers are needed by the industry. Joint efforts by both processor-suppliers and manufacturer-buyers of cherries are needed to find a satisfactory solution. In this way, perhaps a package with a lower cost can be found which will in turn contribute to improved cherry marketing performance.

SOME QUALITY ISSUES

The adoption of mechanical harvesting during the 1960s and early 1970s necessitated a number of changes in cherry handling and processing methods to maintain desirable quality with the new harvesting techniques. One element of the new system in Michigan has been for growers to invest in cooling facilities and in large new wells for cold water to cool the cherries. Growers have become skilled at operating the mechanical harvesting equipment for desirable quality, at cooling the cherries immediately after shaking, and at delivering well-cooled cherries to the processor within 8-12 hours after harvesting. Processors have improved their coordination of deliveries and process the cherries within a limited number of hours after cooling begins. The entire process requires closer coordination of the harvesting, cooling and processing operations than was needed with hand harvesting.

Although some quality problems were in evidence during the period when industry adjusted to mechanical harvesting during the later 1960s and early 1970s, now the industry's performance in regard to this is quite favorable. The coordination of the harvesting and processing system to obtain good quality mechanically harvested cherries has been developed extensively and adopted by essentially the entire industry. Research and extension activities of the land grant universities and the U.S. Department of Agriculture contributed significantly to this system of new technology for farms and processing plants, resulting in greater efficiency and good quality.

Nevertheless, despite concerted industry efforts, some cherries sold in final consumer products such as pies are blemished. While the wind-whipped cherry blemishes do not impair the taste, nutritional value or eating quality of the cherry, they are unsightly and are considered undesirable by most consumers for that reason. It would be desirable both for the cherry industry and for consumers to achieve, if possible, the goal of having completely unblemished cherries in the consumer products. This goal is, however, a difficult one with present technology.

A few cherries also contain incompletely removed pits. Although pits do not occur frequently, because of the potential danger to consumers' teeth the industry's goal is to have *completely* pit-free cherry products.

Although there are a small percentage of cherries which have blemishes and an even smaller percentage of cherries with pits, the industry has made substantial technological improvements on quality performance. Within the past few years, processors have switched almost entirely to electronic sorters which permit more precise sorting for blem-

ishes such as wind-whip. Sorting machines also substitute for many hand workers and hence can contribute to lower processing costs than would be the case if the industry still used large amounts of hand sorting labor. Additional improvements in electronic sorters to even more effectively remove blemished cherries have strong industry interest.

In recent years, the cherry processing industry has supported research on improved cherry pitting equipment which it hopes will eliminate pits in the finished cherries. Another goal of the new pitter research has been to develop a system with increased capacity compared with existing standard equipment. Some progress has been made from an improved pitter to accomplish both of these goals.

DISTRIBUTION OF RISK: HIGH RISKS SHIFTED ONTO OTHER PARTICIPANTS

As discussed earlier, there are many risks in cherry marketing, particularly those associated with widely-fluctuating supplies and prices. Because of the market structure at different levels, the financial position and the consumer access of different firms at different levels, and the commodity or noncommodity orientation of the various types of firms, a high percentage of these risks has been shifted from the retailers and manufacturers to the processors and growers. Retailers and manufacturers generally have effective consumer access, substantial financial abilities and a degree of oligopsony power. The degree of oligopsony power arises in part because retailers and manufacturers can, and will, drop a nonessential commodity like cherries from their offerings if forced to carry a high degree of risk. These companies have, because of these and other reasons, been able to shift most of the risks back to the processors. Retailer grocers have accomplished this risk shifting to a higher degree than have manufacturers.

Processors have tried, in some cases successfully, to shift risks to growers through methods such as forming a cooperative or buying cherries on some type of price-later basis. A shift to cooperatives has been especially the case in recent years because of processors' fears of Michigan's bargaining law (Public Act 344) which provides a strong means to help growers shift pricing risks to the proprietary processors.

Some processors argue that growers are better able to bear the risks than processors since growers often have a higher percentage of equity financing in their farm business than do processors in their plants. Recent trends indicate that many growers are willing to bear more of the risks involved with cherries, since a growing percentage of the tonnage has switched to processing cooperatives or to grower-owned processing facilities, away from proprietary processor ownership.

Consequences of the risk shifting situation include:

- a. Since processors often seem to be the firms least able to bear the high pricing risks, the result of high processor risk-bearing seems to be inequitable to them.
- b. Since growers seem to be better able to bear the risks than processors, but lack market power (as do processors), processors are increasingly shifting the risks to growers. Growers can argue that relative to the financial risk-bearing ability of the manufacturers or retail firms, this is inequitable to the growers.

- c. To the extent the processors and growers are not able to bear the risks, they will go out of business and their specialized investments in orchards, machinery and facilities will be lost for future production. To the extent that consumers and manufacturers want cherries for their needs, this will be detrimental to them in the long-run.

SUMMARY

Rather than constrain our discussion of performance in the tart cherry subsector to conform to ideal standards, we have attempted to analyze and discuss the relation between possible performance and current performance in selected areas. This discussion, including coordination of commodity demand and supply conditions, indicates a number of performance features such as risk and control in the subsector. The comparison of subsector demand and supply conditions shows some performance features related to quantity, timing, and quality coordination issues. Understanding of subsector performance is especially crucial for attempts to draw current performance closer to desired performance.

Just what constitutes *desired* performance, of course, cannot be entertained without first recording our Pareto-optimal conditions. A change in performance alters the distribution of economic goods in the subsector. Hence any suggested change in the subsector organization will have its proponents and detractors.

In summary, the discussion in this chapter was devoted to developing various dimensions of vertical coordination and performance in the tart cherry subsector. Special attention was given to demand transfer, supply planning, and technological aspects of vertical coordination. Inasmuch as this subsector's characteristics can be generalized to other commodities, either wholly or in part, this inquiry may contribute to a guide for analysis of other commodity subsectors.