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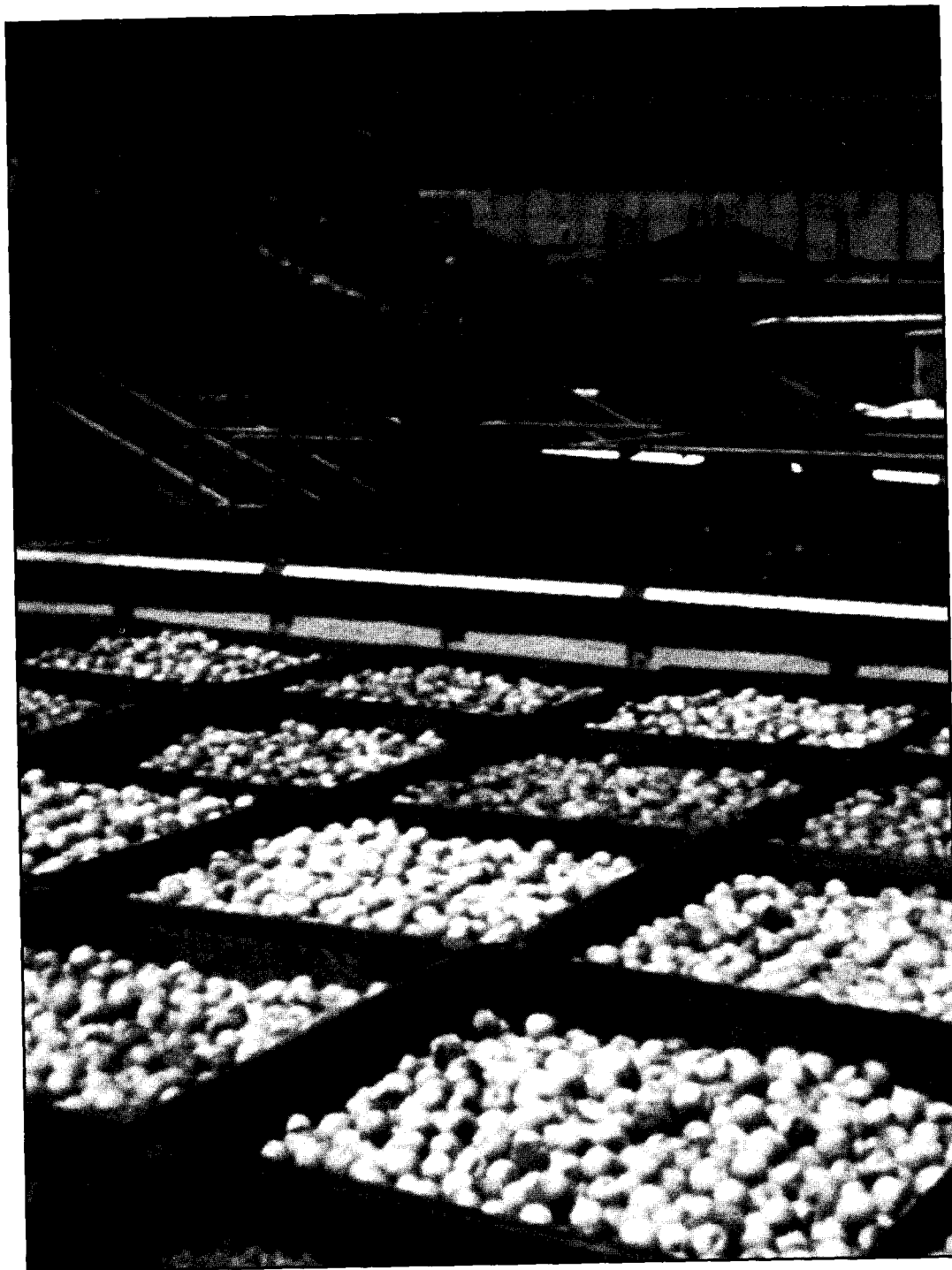


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Report 166

Cooperative Pooling Operations



Abstract

Pooling is a marketing practice distinct to cooperatives and refers to a particular method by which a cooperative markets the crops of its producer-members. Commodity pools are most prevalent in the fruit, vegetable, nut, rice, and dairy industries. This report will discuss the pooling practices of fruit and vegetable cooperatives as a marketing alternative for their producer-members. The intent of this report is to clarify cooperative pooling practices and to present the structural, managerial, financial, and coordination aspects of a successful commodity pooling program.

Keywords: Cooperative, pooling, fruit, vegetables, marketing

Cooperative Pooling Operations

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Contents

Introduction

Types of Market Pools

Advantages of Pooling

 Risk Sharing

 Improved Marketing3

 Increased Market Power3

 Quality Control3

 Economies of Scale

Potential Barriers to Successful Pooling3

 Delayed Payments3

 Loss of Individuality4

 Less Flexibility4

 Managerial Expertise

Marketing Agreements4

Pooling Illustration5

 Pooling Policy

 Determining Market Value5

 Determining Costs and Returns6

 Sample Pool Calculations6

Single Versus Multiple Product Pool8

The Question of Subsidization11

Cooperative Examples12

 Ocean Spray Cranberries, Inc.:13

 National Grape Co-operative Association, Inc. /Welch
 Foods Inc., A Cooperative:13

 Citrus Marketing:14

Summary..15

References16

Cooperative Pooling Operations

Andrew A. Jermolowicz

Pooling is a marketing practice distinctive to cooperatives and refers to a particular method by which a cooperative markets the crops of its producer-members. Commodity pools are most prevalent in the fruit, vegetable, nut, rice, and dairy industries and to a lesser extent, cotton and grain industries. This report focuses on the pooling practices of fruit and vegetable cooperatives as a marketing alternative for producer-members. Cooperative pooling practices are discussed along with structural, managerial, financial, and coordination aspects of a successful commodity pooling program.

Introduction

Pooling is a unique business agreement and refers to the combination of production from many producers under the marketing skills of a specialized staff. Cooperative marketing pools use variable payment schedules and marketing agreements. Successful pooling operations require considerable coordination between the cooperative and producers regarding the production, harvesting, and delivery of commodities.

Each producer-participant is paid the average price received for all product of like quality delivered during the duration of the pool. A member's share of the pool proceeds is determined by the volume of product contributed and may be adjusted for either premiums or discounts related to quality differences. Pool operating costs are allocated among producers and deducted from their returns prior to settlement. The typical pool: provides an advance payment at, or near, the time of product delivery; makes progress payments as pool contents are sold; and-makes a final payment to participants once the pool is liquidated and all costs are reconciled.

Pooling is a distinct cooperative method of marketing with one major difference from either outright purchase or selling on individual accounts where the identity of each individual grower is preserved and the grower is paid exactly what was received in the market. In a pool, the producer turns over decision-making authority to the cooperative and no longer controls when or for what price the crop is sold. However, the increased volume of member product from commingling production increases the cooperative's leverage and impact in the market and mitigates risk.

A cooperative operating a commodity pool for its members must address a number of rather complex issues. For example, when developing a pooling plan, the cooperative must decide on the number of pools to use and how each will be separated regarding commodity type and grade, the production areas to be included,, and how long it will remain open. Careful consideration must be given to each of these factors and analyzed for their effect on the operation of the cooperative. The pooling program must be fair to all members by providing the appropriate differentials for variations in product quality or timing of delivery, ensuring equitable distribution of marketing risks, and assigning equitable allocation of expenses. To some degree, the success of a pooling program depends on how effective the cooperative communicates the importance of forgoing short-term gains for long-term stability to its members.

Types of Market Pools

Although a number of alternative structures exist within each, there are basically two classes of market pools, seasonal and contract. With the more common seasonal pool, the cooperative's management staff is responsible for all marketing decisions. Member pro-

duction is commingled and marketed. Producers receive payment based on the average price the cooperative obtains from joint marketing. Although referred to as seasonal, there is no set length of time this class of pools can remain open. Given the wide array of horticultural crops marketed by cooperatives and the fact that no two associations face exactly the same circumstances, the length of time a pool remains open varies from one cooperative to another. Two factors that may influence the duration of a seasonal pool are the type of commodity being marketed and the geographic area being served. Certain high-value, highly perishable, or commodities subject to extreme price variability may require daily or weekly pools in order to efficiently and equitably market a crop. Commodities capable of being stored, processed, or available in ample supply throughout the year usually require longer pooling periods, some up to a year or even longer.

Geographic differences among producer-members also affects how a pooling program is structured. For example, a cooperative may have producers in two or more distinct producing regions of the country. In this case, there will likely be differences in crop varieties being produced, yields, grading standards, or other quality related factors. Consequently, the cooperative may operate separate pools to capture these differences among members.

Contract pools are quite different because the producer retains some control over when and for how much his produce is sold. Contract pools can be defined as either a call or purchase pool. In a call pool, the cooperative serves as a broker. The producer in effect has final authority for when his produce is sold by setting a minimum or target price level. In the purchase pool, the return a producer receives for his crop is determined by when he delivers to the cooperative. Typically, a purchase pool will pay the member the prevailing cash market price on the day the produce was delivered. Producers participating in a contract pool retain some control over the marketing of their produce, but do not benefit from the cooperative's marketing expertise or the risk-sharing aspect found with the seasonal pool.

Commodity pools may cover single or multiple commodities. The single product pool deals with each commodity or grade separately such as used in a citrus marketing cooperative. Participants in this pool are paid the average price received for their specific commodity during the marketing period. A multiproduct pool uses a single accounting system to manage all commodities and grades delivered to the cooperative.

In this case, producers are paid the average price received for all products marketed during the pool period. Multiproduct pools are more common with cooperatives serving vegetable producers because there is a much greater likelihood that the association will be handling a mix of products.

Occasionally, a cooperative may be required to establish a special pool to deal with abnormal marketing situations. For example, in the case of severe freeze or hail damage, the cooperative may establish a new pool to handle these affected commodities. A special pool would be necessary if the damage to the produce was significant enough that it would not qualify for inclusion in any existing pool. Consequently, this produce would be commingled and marketed separately to avoid reducing the average earnings of the regular pool.

Advantages of Pooling

Risk Sharing: One of the key advantages of participating in a commodity pool is sharing of risk. Fruit and vegetable crops are very weather-sensitive commodities and prone to wide swings in supplies and prices. Income from these crops can vary widely from year to year. Producers deliver product over a specified period of time and receive an average price, so many of the cyclical fluctuations in price or changes in consumer demand will be spread, and thus minimized, among all producers in the pool.

This is especially true for crops destined for the fresh market. Prices for many fresh market commodities tend to be higher during the early and later stages of the marketing season when product supply is light. With pooling, higher-than-average returns offset lower-than-average returns. As a result, producers contributing products to a pool are not necessarily penalized merely for the timing of their deliveries. Participants in a multiproduct pool are likely to receive additional risk sharing since although they may specialize in a particular crop, they benefit from the overall diversification of the cooperative's marketing plan.

Members who produce high-value crops, or consistently deliver product of above average quality, may feel that they are subsidizing marginal producers. However, producers must realize that in any given year a particular crop could have either a good or bad financial performance. When costs and returns are allocated over a number of commodities, those per-

forming well will support those doing less favorably. Over time, the averaging of costs levelsthe periodic ups and downs in the market.

Improved Marketing: In a market pool the cooperative maintains a staff of marketing specialists to handle the sale of member produce. The primary objective of the cooperative's sales staff is to maximize the returns to the producer. By having some knowledge of the quantity and timing of member deliveries, the cooperative gains considerable flexibility in planning. The cooperative can also exercise some control over when harvesting and delivery occur.

This control enables the cooperative to maintain a consistent supply. Many produce buyers emphasize the importance of working with a reliable, consistent supplier. Having knowledge of the needs of both buyer and seller enables the cooperative to coordinate a more orderly flow of product to the market and build relationships with buyers. Also, by having the time and resources to constantly monitor the market, the cooperative can capitalize on any new market opportunities.

Increased Market Power: Many fruit and vegetable markets are characterized by a large number of small (volume) producers selling to a small number of large buyers. It is unlikely a single producer would have enough volume to take advantage of market opportunities available to large-scale sellers.

However, by pooling, the volume of produce marketed can be significant enough to enhance bargaining position and possibly result in improved prices. Pooling allows the cooperative to approach the market as a single seller of a large quantity of product. Buyers are frequently more willing to negotiate with a single seller than with a large number of relatively small sellers, especially when the buyer is seeking a particular type or quality of product. Commingling a commodity under a single seller may also increase competition among buyers needing the raw product if the pool can amass enough volume to become a primary supplier.

Quality Control: Producing and marketing a quality product is essential to compete in fruit and vegetable markets. Being able to consistently provide a product with the size, color, or taste characteristics demanded by buyers greatly enhances a seller's ability to market a crop. A pooling program enables the cooperative to become involved in the production

process at an early stage and address product quality issues before they become a problem. Cooperatives can use marketing agreements to establish quality standards.

Typically, a marketing agreement between the producer and the cooperative will outline specifications for plant varieties, fertilizer and agricultural chemical applications, irrigation, or other production-related activities. By having some control over the production, harvesting, and handling of a crop, the cooperative can minimize costly errors. Further, by having members deliver produce to a central source for grading, sorting, and sizing, the cooperative can develop and maintain a standard pack that appeals to prospective buyers. A cooperative pool that outlines and enforces strict quality standards discourages producer-members from delivering inferior quality produce. Establishing a reputation for quality and consistency greatly enhances the cooperative's ability to compete in the marketplace.

Economies Of Scale: Frequently, individual growers lack sufficient physical volume to efficiently operate a grading or packing facility, a processing operation, or distribution system. Marketing through a cooperative pooling program lowers the per-unit cost of most post-harvest activities because certain expenses can be spread out over a greater volume of product. Larger scale operations may also draw more favorable prices when purchasing supplies or negotiating harvesting, hauling, or other transportation rates.

Most individual producers cannot economically justify investing in state-of-the-art technology. For example, the cost of controlled atmosphere storage is prohibitive for an individual apple grower, but can be obtained when the investment cost is allocated among producer-members of a cooperative. Marketing through a cooperative pool may enable producers to become involved in certain value-added processing activities.

Potential Barriers to Successful Pooling

Delayed Payments: By design, members of a marketing pool do not receive full payment for their crop until that pool is closed. Depending on the length of the pool and the size of the advance and progress payments, some producers may encounter temporary cash-flow problems. However, pool managers invest considerable time in establishing a base price and payment schedule that is sufficient for most producers.

Loss of Individuality: Producers participating in a marketing pool must relinquish control over the marketing decisions associated with their crop. Producers who enjoy negotiating deals, have good marketing skills, or enjoy taking risks may find this component of pooling restrictive. Given the dynamic nature of most produce markets, producers may at times earn a higher price than the pool price by selling on an individual basis. But, by relinquishing individual marketing decisions to the cooperative, marketing pools become financially beneficial to producers over the long term.

Less Flexibility: Most pooling programs focus on long-term versus short-term marketing strategies. A cooperative having knowledge of the timing, quantity, and quality of a crop will likely benefit from the ability to negotiate early or long-term sales agreements with buyers. Although an early commitment will promote stable prices and product movement, the association may no longer be able to react to sudden market changes. However, the benefits to producers from long-term market stability generally outweigh any sacrifice of short-term profiteering.

Managerial Expertise: Cooperative pooling is an effective marketing method for many commodities, but it can also be a complicated program to establish and maintain. A successful pooling program requires a knowledgeable and skilled management team as well as the willingness of both the association and the producer-members to invest the time and money necessary to develop an effective marketing plan. Clear communication between the cooperative and its members regarding the marketing philosophy of the pool must be maintained. Some of the elements inherent with pooling such as long-term commitments, delayed payment schedules, and capital retains could lead to discontented members. The cooperative must be ready to address the inevitable conflict between individual members and the long-term stability of the association's marketing program. The key is a well-conceived cooperative member education program.

Marketing Agreements

For an effective marketing program, the cooperative needs to have long-term support and commitment from the membership. Knowing it has a long-term commitment from its members to deliver high-quality products, the cooperative realizes a much stronger

sales and bargaining position in the marketplace. This improved marketing position allows the cooperative to provide a greater degree of market stability.

Consequently, the use of marketing agreements or contracts becomes a critical component of any effective pooling program. A marketing agreement is a written, legal document between the cooperative and the producer-member. The agreement states the rights, duties, and responsibilities of both parties regarding the sale of produce through the cooperative. Growers agree to deliver all or part of their production to the cooperative. In turn, the cooperative agrees to sell the member's produce for the best price possible and to return payment to the grower. Marketing agreements are used to ensure that both the member and the cooperative comply with their obligations.

A marketing agreement is a planning tool that allows the cooperative to coordinate the activities involved in producing and marketing a crop. Control over the quantity and timing of delivery enables the cooperative to precisely schedule processing or marketing operations. Further, control over production and harvesting allows for more efficient use of packing and processing capacity which, in turn, generally lowers operating costs.

The marketing agreement also provides a legal basis for penalizing nonperformance. For example, a recurring problem for many marketing associations is that producers abandon the cooperative during years when production is short and prices are high. If the percentage of members who bypass the cooperative is high enough, the cooperative may have difficulty meeting market commitments or covering operating costs. The agreement clearly states contractually that members are expected to abide by terms and conditions set forth in the agreement and that disciplinary measures (i.e., penalties, such as liquidated damages or expulsion from the association) will be taken against offending parties.

Some of the more common provisions contained in a marketing contract between the grower member and the cooperative include:

- the amount of product a member must market through the cooperative,
- acknowledgment of the grower-members **obligation** to deliver to the cooperative and the cooperative's obligation to market and/or process the crop,
- the length of time the contract is in force,
- authorizing capital retains (equity capital),
- defining the penalties for noncompliance,
- quality and quantity standards, and

- payment methods including a description of pool operations.

Pooling Illustration

Given the variety of commodities produced, their use, and where they are produced, it is neither possible nor practical to have one standard pooling policy for every cooperative. Cooperative pooling programs meet specific needs of producer-members. However, in theory, and in practice, cooperative pooling programs will share certain common elements, albeit to varying degrees. The following section will present a generalized overview of a cooperative pooling program.

Pooling Policy: A cooperative's pooling policy is typically outlined in the association's governing documents. In general, the board of directors establishes the pooling period(s) and the type of pool (duration) appropriate for a particular commodity. The board also establishes a measure for crediting deliveries such as the number of units (boxes, bushels, etc.) or weight (physical volume).

In most cases, payment to members is based on the number of units of like quality produce delivered to the same pool, less all charges and expenses associated with operating the pool. In the event of a natural disaster, the board may authorize closing a pool of product already delivered and establish a new pool for the remainder of the delivery season. An example would be a citrus marketing cooperative having to prematurely close a pool due to a major freeze.

Although pool accounting can become quite complex, it basically requires that a separate account be established for each commodity pool the association operates. Records indicate the amount of produce each member delivers to the pool. Direct and indirect costs associated with operating the pool are allocated and then collected from sale proceeds of that pool. The board establishes and approves the charges associated with operating the pool. Revenues from the sale of product are credited to a pool as they are received by the cooperative. After deducting assessments, net pool returns are credited to each member's account on the basis of how many units they delivered to the pool.

Determining Market Value: One of the most important and sometimes difficult aspect of operating a commodity pool is determining the value of the raw products delivered. Establishing a realistic raw product price, or economic value, is important because the initial payments (advances) to growers are often based on this estimate. Furthermore, if the raw

product is further processed or becomes a component of a product mix, the cooperative needs to have an accurate estimate of the raw product's value relative to the value of the final product. In this case, having an estimate of the raw product's final value will enable the cooperative to maintain an equitable payment schedule in cases where there are significant differences in the quality of products delivered.

The calculation of an economic value for many fruit and vegetable commodities has become increasingly difficult due to the rise in concentration among buyers. Establishing an accurate value for member produce is an integral component of the cooperative's sales, pricing, inventory, and accounting programs. Mergers and consolidations among industry participants, particularly in the processed products sector, have resulted in fewer buyers and transactions, and in many cases, smaller cash markets. Consequently, reliable market and price information may be scarce or nonexistent.

In cases where a cooperative handles a single commodity and no established raw product value (i.e. cash market) is available, proceeds to growers are calculated by subtracting marketing and operating costs from the gross revenue generated from selling member's products. Under these circumstances, the cooperative's costs are the determinant of the value of the raw product. This valuation is sufficient only as long as the value of the raw product is greater than, or equal to, any available alternative. If the cooperative's price was consistently lower than a competitor's, producer-members may not remain loyal very long.

Consequently, using an established raw product value to compare performance relative to alternative markets is a common practice. When available, a cash market price is often used as the basis for measuring a cooperative's performance. For example, if the return to growers marketing through the cooperative was \$10/unit, and the cash market price was known to be \$9/unit, the cooperative would have returned 111 percent of market value ($10/9 \times 100$) or 11 percent more than the alternative market. The ability to measure performance against the market or a competitor is most beneficial to the cooperative that consistently obtains a better-than-average return for its members.

Cooperative pools do not typically pay the entire raw product value to growers at the time of delivery, so having an established value at the time members deliver product enables the cooperative to determine an advance payment level that is consistent with the prevailing market conditions. The level of the advance payment compared with the final price varies among

cooperatives. Most try to make an advance payment sufficiently large enough to help producer-members avoid cash-flow problems. The amount of the advance payment is usually set by the board of directors. The payment can be either a fixed-dollar amount or a pre-determined percentage of the raw product value. There are a number of ways for the cooperative to establish a raw product value.

If a cooperative has extensive experience with a particular crop and market, and has maintained detailed records, it may rely on its own historical average for setting the raw product price. An alternative would be to use commodity exchange prices.

In many cases the negotiated prices that result from collective bargaining between producers and processors serve as the established market value. In the fruit and vegetable industry, a number of cooperative bargaining associations represent producer interests during negotiations with processors. Bargaining negotiations are conducted before the production season begins. Typically, the negotiated contract will define the price level for various product grades in addition to specifying any adjustments for quality-related factors or timing of delivery.

The negotiated price reflects the anticipated supply and demand conditions as well as current inventories. When both parties negotiate in good faith, their efforts generally result in an accurate and equitable raw product price. Consequently, a number of pooling cooperatives use this negotiated price as their base, or market value, when determining the level of initial payments to members.

In markets characterized by the presence of a dominant firm, the price it quotes often becomes the industry price. The dominant firm announces a price that it is willing to pay at the beginning of the season, and given its status in the marketplace, the remaining firms generally accept this price rather than enter a potentially costly bidding war. Although the dominant firm's price may be arrived at in less than competitive fashion, it may reflect what the market is willing to pay for a particular commodity within the dominant firm's area of operation.

The commercial market value (CMV) refers to the base price used to value commodities delivered by producer-members. Many cooperatives appoint a committee of either directors or producer-members to determine the CMV. The commodity committee attempts to establish a CMV competitive with prices paid by other commercial processors handling similar crops in the same production area. Frequently, the CMV is represented as a weighted average. If the

cooperative is handling multiple commodities, it is most likely that it will establish a separate CMV for each crop.

In practice, a cooperative using the CMV usually advances 50 percent of the CMV when the raw product is delivered. An interim payment of about 25 percent will be made some time after delivery, but before the end of the pooling season. The timing and size of the interim payment will vary and will most likely be related to the pool's duration and the cooperative's liquidity. A final payment is made when the pool is closed or the fiscal year ends.

Determining Costs and Returns:

Regardless of the type or duration of commodity pool being operated, a cooperative must develop an accounting system that accurately allocates the expenses associated with marketing a particular crop. The cooperative must record the direct and indirect costs of operating the marketing pool and determine if costs should be allocated on a flat per-unit basis or in proportion to the crops value or volume. Direct expenses such as labor, materials, transportation, storage, and financing are assigned to each particular pool. Indirect, or overhead, costs typically include general expenses, taxes, insurance, and administrative expenses and are similarly allocated. The methods of determining and allocating costs will vary from one cooperative to another and will be heavily influenced by the nature of the commodity being delivered and its intended final use.

Sample Pool Calculations: This example shows how a cooperative may operate a pooling program. In this case, deliveries of three apple producers (A, B, and C) will be used to illustrate how pool payments are calculated and distributed.

Each grower produces the same (one) variety of apples which are then sorted into three separate grades. For this example, the highest quality produce is designated Grade 1. Apples not meeting that specification are designated either Grade 2 or Grade 3 depending on the degree to which they differ from the Grade 1 standard. The cooperative operates a separate pool for each grade delivered by members even though only one commodity is being marketed.

Consequently, this case can be viewed as an example of a multi-product pool because each grade of apples will be earning proceeds independently. This example also assumes that the cooperative will operate a seasonal pool, and that the entire crop will be sold

during the current production season (i.e., no inventory is carried over to the following year).

Tables 1 and 2 show how the cooperative would account for raw product deliveries from members in addition to how returns to growers would be calculated. In this example, the cooperative has established separate accounts for each producer and, after the produce has been sorted and graded, recorded the appropriate number of bushels of each particular grade delivered. Next, the cooperative combines or pools the individual quantities of like-grade produce. In this case, the cooperative’s three commodity pools are comprised of a total of 17,000 bushels, 14,000 bushels, and 13,000 bushels of Grades 1, 2, and 3, respectively (Table 1).

In this example, member produce was marketed (sold) at an average price of \$8/bushel for Grade 1, \$7/bushel for Grade 2, and \$6/bushel for Grade 3.

Multiplying the average price received by the total number of bushels of each particular grade delivered yields the cooperative’s gross revenue from apple sales.

Historical data and pre-season evaluations of market conditions by the cooperative’s commodity committee resulted in the establishment of raw product values (costs) of \$4.80/bu. for Grade 1, \$4.55/bu. for Grade 2, and \$3.60/bu. for Grade 3 apples. As previously noted, the value or cost of the raw product is an essential component of a pooling program and is frequently used as the basis for making initial payments to growers for the commodities delivered.

Additionally, the cooperative has determined the per bushel direct costs associated with the specific labor, handling, and packaging for each grade. In this example, per bushel direct costs were established at \$1 for Grade 1, \$0.90 for Grade 2, and \$0.75 for Grade 3. Differences in the amount of direct costs being charged

Table 1— Example of pool calculations

	Raw Product Receipts From Members (bu.)			
	Grade 1	Grade 2	Grade 3	Total
Producer A	2,000	4,000	8,000	14,000
Producer B	9,000	3,000	1,000	13,000
Producer C	6,000	7,000	4,000	17,000
Total	17,000	14,000	13,000	44,000
Cooperative Sales	17,000@\$8	14,000@\$7	13,000@\$6	
Gross Revenue	\$136,000	\$98,000	\$78,000	\$312,000
Cost/Value of Raw Product	\$31,600	\$63,700	\$46,800	\$192,100
Per Unit	\$4.80	\$4.55	33.60	
Direct Costs (labor, packing, etc.)	\$17,000	\$12,600	\$9,750	\$39,350
Per Unit	\$1 .00	\$0.90	\$0.75	
Gross Margin	\$37,400	\$21,700	\$21,450	\$80,550
Overhead and Administrative Costs	\$5,000	\$5,000	\$5,000	\$15,000
Pool Proceeds	\$32,400	\$16,700	\$16,450	\$65,550
Per Unit	\$1.91	\$1.19	\$1.27	
Return to Growers	\$114,000	\$80,400	\$63,250	\$257,650
Per Unit	\$6.71	\$5.74	\$4.87	
Percent of Proceeds	140	126	135	
Retain (\$0.20/bu.)	\$3,400	\$2,800	\$2,600	\$8,800
Cash Distribution	\$110,600	\$77,600	\$60,650	\$248,850
Per Unit	\$6.51	\$5.54	34.67	

to the different grades of product reflect the additional expenses incurred in preparing higher grade fruit for sale. Subtracting the cost of the raw product and direct costs from the gross revenue figure yields the gross margin from apple sales.

A fixed overhead and administrative cost of \$5,000 is assessed to each of the three pools. Subtracting these cost from the gross revenue figure results in the proceeds or profit earned by the pool. In this example, fruit in the Grade 1 pool earned \$32,400 (\$1.91/bu.), Grade 2 fruit earned \$16,700 (\$1.19/bu.), and the Grade 3 pool earned \$16,450 (\$1.27/bu.).

Total returns to growers are calculated by adding pool proceeds and the value of the raw product. Table 1 shows returns to growers to be \$6.71/bu. for Grade 1 fruit, \$5.74/bu. for Grade 2, and \$4.87/bu. for Grade 3. A measure of how a cooperative pool participant fared compared with the market can be determined by dividing the grower return by the value of the raw product. Again, this is a reasonable measure of performance because the value of the raw product should reflect what the cash market would have paid for the produce. In this example, each of the three pools returned earnings above the cash market value. Cooperative members received returns that were 40, 26, and 35 percent higher for Grade 1, 2, and 3 fruit, respectively.

The final stage of the pools accounting process is deducting retained earnings. Earnings retained from grower returns (profits) are used to finance the cooperative and ensure its ability to continue to function as a viable market outlet for member-growers. The cooperative's retain policy will be outlined in the association's governing documents. The amount of earnings retained by the cooperative is determined by the board and will vary depending on the size and nature of the cooperative's business. In this example, the cooperative retains \$0.20 for each bushel of apples marketed. Subtracting the retain from the grower's return results in the total cash distribution that will be made to the grower for the product delivered.

Table 2 extends the current example by illustrating a payment schedule the cooperative might use to distribute crop payments and pool earnings to grower-members. Again, individual grower accounts have been maintained to accurately record the volume of each particular grade delivered by each member.

A cooperative commodity pool typically uses some form of delayed schedule to allocate returns back to growers. Generally, producers receive an advance payment at the time they deliver their produce to the cooperative. The advance payment is often a percentage

of the raw product value established by the cooperative. In this case, producers receive 50 percent of the raw product value for each particular grade they deliver.

As sales of product are completed and management can better assess market conditions, the cooperative generally authorizes an interim payment to producers. Size of the payment generally reflects the success of sales. In this example, the cooperative pays the remaining 50 percent of the raw product value. After all produce in the pool has been sold and all costs have been accounted for and allocated, the pool is considered closed. The cooperative calculates proceeds (profit) earned by each individual pool.

Each of the three pools in this example earned positive proceeds. After deducting \$0.20/bu. for retained earnings, the cooperative can make a final payment to producers. In this example, producers received a final payment of \$1.71/bu., \$0.99/bu., and \$1.07/bu. for Grade 1, 2, and 3 apples, respectively.

Although in this simplified example, all three pools yielded a profit, a pool could show a loss. That potential reinforces the need for the cooperative to establish an accurate raw product value. It becomes an integral component of the pooling program used to account for a crop's percentage (value) of the finished product and to establish the grower payment schedule. Although the cooperative has issued an initial payment at the time of delivery, it retains some discretion on the timing and amount of interim payments. In a year when market prices do not meet pre-season expectations, the cooperative's marketing staff may consider this when determining the amount of the next payment to growers. Interim payment decisions must consider the cash-flow needs of the producer-member as well as the cooperative. Consequently, it may be in the best interests of both that no, or smaller, interim payments be made.

Single Pool Versus Multiple Product Pool

The pooling and marketing of a single commodity is a relatively straight-forward operation. Although many producers and cooperatives specialize in the production and marketing of one particular commodity, many other associations handle a variety of different crops grown by producer-members.

There are obvious economic incentives (scale economies, risk reduction, etc.) for a cooperative to market or process an array of crops. This is especially true in California where it is quite common for a farming operation to be producing several fruit and vegetable crops. However, handling a broad product mix

Table 2— **Grower payment schedule**

Product Receipts From Members by Quantity (bushels) and Grade				
	Grade 1	Grade 2	Grade 3	Total
Producer A	2,000	4,000	8,000	14,000
Producer B	9,000	3,000	1,000	13,000
Producer C	8,000	7,000	4,000	17,000
Total	17,000	14,000	13,000	44,000
Payment Schedule by Grade (per bushel)				
Advance Payment	\$2.40	\$2.30	\$1.80	
interim Payment	2.40	2.25	1.80	
Final Payment	1.71	.99	1.07	
Average Pool Price	\$8.51	\$5.54	\$4.87	
Individual Member Payments				
Producer A	Advance Payments	2,000@ \$2.40 + 4,000@ \$2.30 + 8,000@ \$1.80		
		\$4,800 + \$9,200 + \$14,400		\$28,400
	interim Payments	2,000@ \$2.40 + 4,000@ \$2.25 + 8,000@ \$1.80		
		\$4,800 + \$9,000 + \$14,400		328,200
	Final Payments	2,000@ \$1.71 + 4,000@ \$0.99 + 8,000@ \$1.07		
		\$3,412 + 93,972 + \$8,520		<u>\$15,904</u>
	Total Cash Payments			\$72,504
Producer B	Capital Retain	14,000 @ 90.20		\$ 2,800
	Advance Payments	9,000@ \$2.40 + 3,000@ \$2.30 + 1,000@ \$1.80		
		\$21,800 + 98,900 + \$1,800		\$30,300
	interim Payments	9,000@ \$2.40 + 3,000@ \$2.25 + 1,000@ \$1.80		
		\$21,800 + \$8,750 + \$1,800		\$30,150
	Final Payments	9,000@ \$1.71 + 3,000@ \$0.99 + 1,000@ \$1.07		
		\$15,354 + 92,979 + \$1,085		<u>\$19,398</u>
	Total Cash Payments			\$79,848
Producer C	Capital Retain	13,000 @ 80.20		\$ 2,800
	Advance Payments	6,000@ \$2.40 + 7,000@ \$2.30 + 4,000@ \$1.80		
		\$14,400 + \$18,100 + \$7,200		\$37,770
	interim Payments	6,000@ \$2.40 + 7,000@ \$2.25 + 4,000@ \$1.80		
		\$14,400 + \$15,750 + \$7,200		337,350
	Final Payments	6,000@ \$1.71 + 7,000@ \$0.99 + 4,000@ \$1.07		
		\$10,238 + \$8,951 + \$4,280		<u>\$21,447</u>
	Total Cash Payments			\$98,497
	Capital Retain	17,000 @ \$0.20		\$3,400

raises the question as to whether the cooperative should operate a separate pool for each commodity or a pool for diverse products.

One primary benefit from handling a mix of commodities is that it enables the cooperative to represent a greater volume of product, thereby gaining greater influence in the marketplace. Further, diversification allows the cooperative to minimize the impacts of cyclical or seasonal fluctuations in price or demand in a single crop. The increased physical volume likely to result from marketing multiple crops may also lead to more efficient use of plant facilities and lower per-unit overhead costs which would be allocated among either a greater number of producers or different crops.

The synergistic effects from marketing a broader mix of commodities enable the cooperative to offer its member-growers a more stable market for their produce because pool proceeds are not limited to the performance of a single crop. Pooling multiple crops enables commodities receiving more favorable returns to support those confronting poor market conditions. This mutual support of commodities in a pool can benefit both the producer and cooperative.

In a multiple pool, each commodity is accounted for separately and earns proceeds independently. Again, although only one commodity was considered, the example in Table 1 would be considered to be a multiple pool because each of the three grades of apples earned proceeds independently. General overhead, sales, and administrative costs are shared among each commodity. However, direct costs for items such as labor, processing, and packaging materials are assigned proportionately to each commodity. A multiple pool may be appropriate for a cooperative with members who produce widely diverse crops. For example, a highly seasonal and perishable specialty commodity that requires specialized handling may need separable accounting, especially if the commodity is also considered high risk/high return compared with other crops being marketed. A downside to operating separate pools is that the benefits associated with market stability through mutual support are lost.

Critical to the success of this type of pooling arrangement will be the cooperative's ability to accurately identify and assign overhead and direct costs to each commodity. Further complicating the procedure are the potential challenges in identifying raw product value. Because variations in volume of a commodity delivered, the value of finished products, and differences in processing costs each affect the raw product value, the process of valuing each individual commodity can become arbitrary. Determining these values

will be less of a challenge to the cooperative's management if a cash market or other form of price discovery exists for the commodity.

Regardless of which source of market information is used to value raw products, a well-defined and documented method for allocating both commodity values and costs is essential. Arbitrary assignment of raw product values and costs must be avoided to ensure that no real or perceived issues regarding equitable treatment arise among pool participants.

In the single pool, commodities are accounted for as a whole and earn proceeds mutually versus independently in a multiple pool program. Just like the multiple pool example, general overhead, sales, and administrative costs are shared among each commodity marketed in the single pool structure. Direct costs, although accounted for on an individual crop basis, are aggregated for the group of commodities in the pool.

Pool proceeds are calculated by subtracting total direct costs, total overhead costs, and the total cost (value) of the raw products from the revenue generated from the sale of finished products. Proceeds are allocated to grower accounts in proportion to the percentage of raw product value. A common example of a single pool would be vegetable producers delivering corn, green beans, peas, and carrots that will be combined to produce a vegetable blend. Instead of operating four individual pools, it is more efficient for the cooperative to operate one pool and treat each individual crop as an input in the production of the final product.

One advantage of the single versus multiple pool is that difficulty in assigning costs or problems associated with arbitrarily assigning costs are lessened. Further, the single pool allows both the cooperative and member-grower to capitalize on the efficiencies from allocating market risk among multiple commodities.

Table 3 presents a modification of the apple producer example in Table 1. All product volumes, market prices, and costs are assumed to remain the same. Direct costs are also calculated and assigned in the same manner. However, indirect costs are no longer assigned to individual pools but are deducted in total from the gross margin on aggregated sales.

Proceeds are distributed based on the relative value of individual commodities in the pool. In this example, the value of Grade 1 apples represent 42.5 of gross revenue (\$312,000/\$136,000) and Grades 2 and 3 represent 33.1 (\$312,000/\$98,000) and 24.4 (\$312,000/\$78,000), respectively. Pool proceeds are cal-

Table 3— Example of single pool calculations

	Raw Product Receipts From Members (bu.)			
	Grade 1	Grade 2	Grade 3	Total
Producer A	2,000	4,000	8,000	14,000
Producer B	9,000	3,000	1,000	13,000
Producer C	6,000	7,000	4,000	17,000
Total	17,000	14,000	13,000	44,000
Cooperative Sales	17,000@ \$8	14,000@ \$7	13,000@ \$6	
Gross Revenue	\$136,000	\$98,000	\$78,000	\$312,000
Cost/Value of Raw Product	\$81,600	\$63,700	\$46,800	\$192,100
Per Unit	\$4.80	\$4.55	\$3.60	
Direct Costs (labor, packing, etc.)	\$17,000	\$12,600	\$9,750	\$39,350
Per Unit	\$1 .00	\$0.90	\$0.75	
Gross Margin	\$37,400	\$21,700	\$21,450	\$80,550
Overhead and Administrative Costs	\$15,000			
Pool Proceeds				\$65,550
Return to Growers	\$109,459	\$85,397	\$62,794	\$257,650
Per Unit	\$6.44	\$6.10	\$4.83	
Percent of Proceeds	134	134	134	

culated and allocated among each individual grade by multiplying pool proceeds by the percentage value of the crop. In this example, a pool proceeds allocation of **\$1.64/bu.** (e.g. $(\$65,550 \times .425)/17,000$), **\$1.55/bu.**, and **\$1.23/bu.** is made to Grade 1, 2, and 3 apples, respectively. These results differ slightly from the multi-product pool example.

In the single pool case, Grade 1 and Grade 3 fruit earn **\$0.27/bu.** and **\$0.04/bu.** less and Grade 2 apples earned **\$0.36/bu.** more. Because pool proceeds are calculated on aggregate rather than individual pool sales, the percent of proceeds relative to the value of the raw product is also affected. As with the multi-product case, each crop in the single pool returned earnings above the cash market value. However, because proceeds are determined collectively rather than individually, the average earnings for each of the three grades is the same 34.

This result reflects a slight reduction in the percentage return for Grade 1 and Grade 3 fruit and a moderate improvement in the percentage return for Grade 2 apples. This comparison also illustrates how commodities marketed through a single pool can support and complement each other. In this example,

although the average prices paid for Grade 1 and Grade 3 fruit were somewhat lower than they were in the multi-product pool, there was an improvement in average price received for Grade 2 apples. Consequently, producers delivering Grade 2 apples benefited from pooling their fruit with Grades 1 and 3.

It is important to realize that this example only considers the marketing and pooling activities for a given year. Over time it is most likely that each of the three grades will experience cyclical fluctuations in prices received. Therefore, although Grade 1 and Grade 3 fruit yielded higher returns this year, the converse could also occur. Further, if this example were carried out over a number of years, it is expected that the average pool would provide a more stable and consistent return to the grower.

The Question of Subsidizing

The number of pools a cooperative may operate can vary considerably. In the most simplistic case, the cooperative would operate a single pool for all products. On the other hand, the cooperative may choose to operate separate pools for each variety and/or grade of product it receives.

For a cooperative handling multiple commodities or varieties, the effect of not operating separate pools is an increase in the average number of products, as well as greater diversity, in the pool or pools operated. Operating fewer, but broader, pools should reduce accounting costs because there is no longer a need to separate products or for allocating costs among a larger number of pools. Further, averaging the combined returns of a number of heterogeneous products should reduce the yearly variation in grower payments.

One problem with operating a broad product pool is that the potential for some members to subsidize others is increased. Subsidization is possible when commodities generating high net returns are combined with products yielding lower returns and producers of the higher valued products do not receive proportionately higher payments. Consequently, producers who feel they are not receiving adequate compensation are likely to be less than enthusiastic about pooling to market their produce. Further, given the potentially complex relationships between commodities in a marketing pool, it can become increasingly difficult to ensure that equitable payments are being made to all producers. Consequently, there is potential for dissatisfaction with the pooling program and the average price paid.

This situation can also lead to apathy among growers who may feel that there is no incentive to produce and deliver high-value or high-quality crops to the cooperative. This particular issue is sometimes cited as a drawback of a pooling operation. The challenge to the cooperative is to operate a commodity pool that accurately values raw products according to their future profitability.

Buccola, et al, addressed the issue of subsidization in their examination of flexible grower payment formulas. The cooperative principle of service-at-cost implies that producer-members should receive the final product value of products delivered less any processing and handling costs. A cooperative can easily apply the service-at-cost principle if it separates member products and maintains individual accounts. However, this is often a highly inefficient and costly method of accounting. Pooling can offer greater marketing flexibility and an increased ability to diversify and reduce member income risk. The issue that certain products in a pool subsidize others arises from the argument that by returning an average price, the pool violates the service-at-cost principle.

In their research, they examined alternative pool payment formulae with an objective to address the subsidy problem. The study reviewed the structure of

pool payments and alternative ways of valuing raw products in addition to outlining conditions under which the service-at-cost principle is or is not violated. Through simulations, the research tested several alternative methods of determining per-unit returns: moving average; exponential smoothing; econometric model; and raw product market price.

Results of the simulations indicated that weighting raw product deliveries with simple 3-year averages of their previous returns resulted in lower mean subsidies and more equitable income allocation than any of the other three methods. The simpler methods, moving averages and exponential smoothing, outperformed the more complicated models as well as the standard practice of weighting patronage by raw product market prices.

The research concluded that a product should, over a reasonable period of time, be paid its long-run contribution to pool net returns. Further, any random deviations between payment and contribution must be small enough to be acceptable. Recognizing that raw product weights act as relative forecasts of per unit returns, if the quantity of products delivered are uncorrelated with per unit returns and all products per unit returns are biased in the same proportion, no product can subsidize another in the long run (Buccola).

Competitive market prices provide considerable information about future market prices and are frequently a good predictor of future net returns. Consequently, the raw product prices obtained in a competitive market are frequently used as the basis for establishing patronage weights. However, if a cooperative is operating in a market where trading is thin and information is either inconsistent or unavailable, estimates are likely to be unreliable and the cooperative must evaluate alternative payment plans to ensure equitable treatment of members.

Cooperative Examples

Several examples of pooling programs are currently being employed by several different fruit and vegetable cooperatives. This section illustrates how a cooperative pooling program is structured in practice. These examples are not a comprehensive summary of all existing pooling programs, but rather, present actual applications of many of the components of a pooling program previously discussed.

Ocean Spray Cranberries, Inc.: It is headquartered in Lakeville-Middleboro, MA, and occupies a leadership position in the cranberry

industry. Ocean Spray's marketing of member product accounts for about 80 to 85 percent of the North American production of cranberries. The cooperative buys product from members farming in Massachusetts, Wisconsin, New Jersey, Oregon, Washington, Florida, and Canada. The cooperative's product line includes fresh cranberries, fresh grapefruit, processed products, juices, and dried fruit. Ocean Spray also operates several bottling plants throughout the United States.

This centralized cooperative organization for cranberry growers aids in efficient marketing, new product development, enhancing demand, and planning the necessary production required to meet that demand in a way that is most advantageous to its members. The cooperative provides numerous marketing and processing alternatives for its members plus many production-related services. Members share pest management and water nutrient expertise provided by the cooperative, as well as the use of harvesting containers. Each member bears the shipping costs to the nearest receiving station, but remote shipping is often subsidized. Specific regional delivery requirements and fruit standards are itemized in a grower code book provided annually.

Ocean Spray uses marketing contracts with members. Current marketing agreements are 3-year contracts. Production is carefully planned by the membership through the cooperative. All bogs are mapped and production is planned well into the future. The grower must communicate how delivery will be made, provide a reasonable crop estimate, and report any changes in Ocean Spray contracted acreage every growing season. A pesticide plan and report must also be submitted by each grower for review and approval each season. Random samples are taken from every delivery to the receiving station to test for excessive pesticide residues.

Ocean Spray operates a single commodity pool that includes cranberries for both fresh and processed use. The board determines how much fruit can be sold fresh and the number of barrels needed to meet this projection. There are very different cultural practices between fresh and processed bogs, and fresh fruit must possess a "keeping" quality. Typically, fresh sales account for 10 percent of the crop while processed products represent the remaining 90 percent.

Various premiums are offered to growers delivering product that meets certain quality parameters, such as cranberries with high sugar solids that are suited to blending for juices. Discounts are imposed for any trash, defective fruit, and poor color. Incentives

are provided for production and harvesting for the fresh market and for producing for export overseas. Fresh fruit production must be pm-qualified and meet an additional delivery qualification to earn a premium.

All revenues received from the sale of cranberries through the cooperative are pooled. Member growers receive advances upon crop delivery and final compensation shortly after the completion of harvest from this pool, based on the quantity and quality of the cranberries they have delivered to the cooperative (It generally takes 18 months to pay out on a particular crop. The fiscal year is September 1 to August 30.) The costs of the marketing services the cooperative provides and the related operating expenses are also taken from this pool.

Each grower must obtain common shares of stock in the cooperative. The amount of stock that must be held depends on the grower's recent production levels and the pre-determined common stock equity quota. There is usually a period of time over which the grower can accumulate the necessary number of shares, but arrangements with the cooperative to acquire them vary.

This becomes a significant capital expense for the grower because the shares must be held until termination of the contract, when they are then redeemed or transferred. Changes in the member firm's legal structure must be communicated to the cooperative. Transferral of ownership or leasing with controlling interest in the cooperative must be approved by the cooperative. The agreements between the growers and the cooperative are renewed every 3 years, but subject to termination by an advanced written notice.

National Grape Co-operative Association, inc. / Welch Foods inc.: Welch is the processing and marketing affiliated cooperative of National Grape Co-operative Association, Inc., whose 1,500 patrons supply its principal raw products, Concord and Niagara grapes from more than 41,000 acres of vineyards in Michigan, New York, Ohio, Pennsylvania, Washington, and Ontario, Canada. Welch's manufactures and markets fruit juices, blended fruit juice and cocktails, frozen concentrated fruit juices and cocktails, jams, jellies, preserves and spreads, fruit juice bars and fruit-flavored carbonated beverages. The cooperative operates plants in **Lawton, MI**; **North East, PA**; **Grandview, WA**; **Westfield, NY**; and **Kennewick, WA**.

The cooperative operates two commodity pools for members grapes. Deliveries to the Eastern Pool

consist of Concord and Niagara grapes produced in New York, Pennsylvania, Ohio, Michigan, and Ontario, Canada. Western Pool deliveries come from the State of Washington. Both pools are operated on a crop-year basis, but due to the storability of the processed products manufactured, it may actually take up to 2 years for the pool to be closed.

Pool payments are structured to emphasize grapes with higher sugar solids. The economic motivation behind this premium is that deliveries of raw products with high sugar content enables the cooperative to produce sweetened fruit products without having to add other sweeteners. Below standard grapes may either be rejected or received under a low solids program, and at a lower value.

Prior to 1992, National Grape allocated net proceeds from pooling operations on a direct accounting basis. However, this method was found to produce increasingly artificial results. Consequently, the cooperative developed a new method of valuing member produce which measured the value of the cooperative's crops relative to cash market purchases in each local production area. These values are weighted by the respective volumes of each processor to produce a commercial market value (CMV) for the cooperative's crop in each area. Proceeds are distributed to each pool on a proportionate basis.

Since its inception of the CMV pool program, National Grape has evaluated and assessed whether this methodology resulted in improved allocations between the Eastern and Western pools. The cooperative's board of directors began evaluating viable options to resolve the allocation issue after a season in which the spread in proceeds between the two pools was significantly larger than normal.

After evaluating the existing method of allocating proceeds, and the impacts of various options, the cooperative formulated a new method that would improve equitability for all members. The new system is known as the modified CMV method (MCMV). Under this plan, net proceeds are distributed (and equity inputs required) on the same number of dollars per ton in both pools. Producers share net proceeds above CMV on an equal basis regardless of the pool to which they deliver. Equity requirements are also required on an equal, rather than proportional basis.

MCMV program advantages include: dampens the volatility of the current CMV method; avoids the complications and disadvantages of the former direct accounting method; sends a strong value signal to patrons whenever production falls short of, or exceeds,

market requirements; pool results average out close to both previous methods used; and is relatively easy to explain and comprehend.

The change from CMV to MCMV is not dramatic. MCMV should prevent the spread from widening further when the difference between the CMV in the East and West is abnormally large and when Welch's is very profitable relative to CMV. Pool program changes will be reflected in new membership and marketing agreements.

Citrus Marketing: Cooperatives have traditionally played an important role in handling and marketing fresh and processed citrus products. Further, the marketing method most often used by a citrus packinghouse is pooling. Although each cooperative is unique in its application of pooling, there are enough similarities to offer a generalized overview of how a marketing pool is used in this industry.

These cooperatives receive and market member produce for either fresh or processed use. Given the nature of the product, the cooperative is typically active in both markets. All like-variety products are generally combined in a seasonal pool. Citrus pools are further separated by grade, variety, and use (fresh or processed).

Appearance factors are important in citrus products going to the fresh market, and the cooperative will operate individual pools to reflect differences in size, color, or other physical characteristics. Fresh citrus is accounted for on a per-box basis. This unit of measure is a legally defined term indicating the average weight by variety in a given box. Physical appearance is not an issue for processed citrus products. The industry standard for valuing processed citrus is pounds of solids.

The variety of citrus produced and contracted to the cooperative generally determines in which pool the grower will participate (i.e., fresh or processed). However, once the crop has been harvested and delivered to the cooperative for grading, the cooperative makes the final determination on which pool a grower's fruit will be assigned to. Produce not meeting fresh market standards is sent to processing outlets where it is graded and allocated to a pool.

Most citrus cooperatives calculate returns to member-growers on a per-box basis and use some variation of a delayed payment schedule. Handling, packing, capital retains, and other pool operating costs are deducted from the grower's account.

Summary

This report defines and discusses the structural aspects of commodity pooling programs as used by fruit and vegetable marketing cooperatives. The homogenous nature of many fruit and vegetable commodities has made pooling a common method of marketing by agricultural cooperatives. The ability to combine grower-members production gives an association considerable influence or control over the timing, quantity, and quality of produce marketed. The ability to consistently deliver both product volume and quality will assist a marketing association in establishing itself as a reputable supplier which will in turn enhance its ability to cultivate working relationships with other market participants.

The benefits of cooperative pooling of produce include risk sharing, improved marketing, increased market power, quality control, and economies of scale. Pooling can also be an effective way to insulate producers from periodic or seasonal price swings that commonly characterize the marketplace. To ensure equitable treatment, responsibilities and benefits are shared proportionally by all pool members.

Marketing agreements are a critical component in a cooperative pooling program because these contracts ensure that the association has the long-term support and commitment of its members. Marketing agreements provide the cooperative with information that will assist in coordinating supply with demand and provide an improved sales and bargaining position in the market.

The objective of a commodity pool is to consistently return an average price higher than that received by non-pool producers. Aggregating producer-member output gives the cooperative access to a large quantity of product and enhances the association's competitive position in the market. Further, allocating operating costs among a greater volume of product generally results in a lower per unit handling cost and more efficient use of plant or packing shed capacity. The cooperative pool also benefits from an experienced management team that generally has access to market information and other expertise not available to individual producers.

Successful cooperative pooling programs hinge on their ability to provide excellent service and results while ensuring that all producer-members are treated equitably. Successful pooling programs require commitment from members. It will be difficult to preserve loyalty if there is a perception that high-profit prod-

ucts being delivered to the pool are subsidizing lower margin products. The cooperative must maintain harmony between small and large producers. The latter may be more demanding in what they expect from the cooperative.

A cooperative pooling program that rewards producers who meet or exceed minimum delivery standards will realize the benefits of greater marketing flexibility while also assuring that all participants are treated equitably. All producer-members must understand the philosophy and mechanics of how their cooperative and its pooling program work.

No singular pooling plan applies universally to all fruit and vegetable marketing cooperatives. To achieve the economic efficiencies and cost savings associated with pooled marketing, a program must be tailored to meet the individual characteristics of the commodity being produced, the membership of the cooperative, and the market being served. As the food industry continues to become increasingly competitive, concentrated, and global, the advantages of commodity pooling become a more important aspect of successful produce marketing program.

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