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SOME ECONOMIC PROBLEMS INVOLVED IN THE POOLING OF FRUIT

H. E. ERDMAN AND H. R. WELLMAN

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H. E. ERDMAN[1] AND H. R. WELLMAN[2]

METHODS BY WHICH A COOPERATIVE MARKETING ASSOCIATION MAY HANDLE THE PRODUCTS OF ITS MEMBERS

A cooperative marketing association may handle the products of its members in one or more of several ways: it may (1) buy the products of the members outright at prices specified at or prior to delivery, (2) sell the products on the individual grower's account, or (3) operate on a pooling basis.

Outright Purchase at Specified Prices.—The system of buying outright at specified prices is not used by the cooperative fruit-marketing associations in California. The principal disadvantage of this system may be summarized as follows:[3]

(1) The manager of the association, if he is to perform his task properly under this system, must have an accurate knowledge of prices, a knowledge which the managers of local associations, in particular, do not have. It might easily happen that a manager's desire for additional business would cause him to pay more for the goods than they were worth. Also, the determination of price may develop into a bargaining issue between the manager and the members, resulting in the payment of different prices to various members for products of similar quality.

(2) Buying for cash places a heavy financial burden on the association. When an association is operating under this system, it must not only have a sufficient supply of ready funds in order to pay the members as soon as the products are delivered, but it must also maintain a reserve fund out of which losses can be paid.

Selling on Individual Grower's Account.—The practice of selling on individual grower's account is most prevalent in the cooperative marketing of deciduous fruit. For example, nearly half of the local

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[1] Professor of Agricultural Economics, and Agricultural Economist in the Experiment Station.

[2] Extension Specialist in Agricultural Economics.

[3] Black, John D., and H. Bruce Price. Cooperative central marketing organization. Minnesota Agr. Exp. Sta. Bul. 211:41–44. 1924.

associations of the California Fruit Exchange in 1926 handled all or portions of the products of their members in this way. Two important reasons why pooling has not been as generally adopted with deciduous fruits as it has with citrus and dried fruits are that (1) deciduous fruits are commonly graded and packed on the ranches by the growers themselves, and (2) it is difficult to grade certain deciduous fruits accurately even when the grading is performed in community packing houses.

During the summer of 1926, 57.5 per cent of the fruit shipped by 53 local associations of the California Fruit Exchange was packed on the growers' ranches and 42.5 per cent was packed in community packing houses (table 1). In 8 of these associations all of the fruit

TABLE 1

EXTENT OF RANCH PACKING, HOUSE PACKING, POOLING, AND SALE FOR INDIVIDUAL ACCOUNT AMONG FIFTY-THREE LOCAL ASSOCIATIONS OF THE CALIFORNIA FRUIT EXCHANGE IN 1926

	Number of associations			Total
	House pack	Ranch pack	Part house Part ranch	
Pooled only	12	3	4	19
Sold only on individual account	8	5	11	24
Part pooled and part on individual account	4	0	6	10
Total	24	8	21	53

was packed on the ranches; in 24 all of it was packed in community packing houses, and in 21 part was packed on the ranch and part in community packing houses.

Most of the associations which pool the fruit of their members employ the house-pack. The general experience in the pooling of fruit has been that if it is to be graded with sufficient accuracy for equitable pooling, it is desirable that the grading be done in a community packing house instead of on the ranch by the individual growers. Consequently, if the conditions are not favorable for the establishment of a community packing house, the general tendency is for the association to sell the fruit on the individual growers' account.

Pooling.—The term pooling is often applied to any form of cooperative marketing. It is misleading to use the term in this way. Pooling is a particular method by which cooperative marketing associations handle the products of their members.

The selection of a pooling plan involves a decision as to the number of grades to be used as a basis for pooling, the amount of territory to be included in the pool, and the length of the pooling period. Each of these is capable of independent variation; thus a grade may be wide or narrow, the area in the pool may be confined to one locality or it may extend over the entire state, and the length of the pooling period may be for a day or even less or it may be for the entire season. Consequently, it is necessary to analyze the ways in which variations in the grades, the area, and the pooling periods affect the functioning of the organization; in particular their effect upon the following points must be given careful attention:

First, will the pooling plan enable the association to operate in a way that is fair to the members? That is: (1) does it provide the proper differential between members, when variations exist in the quality of the product and in the time of maturity because of varying efficiency of the individuals and because of the differences in climatic and soil conditions? (2) Does it distribute the marketing risks equitably among the members? (3) Does it provide for the equitable prorating of the expenses among the members?

Second, will the pooling plan enable the association to operate adequately and efficiently? Does it give the management the necessary control of the product as to time, place, and new markets, and the power to bargain advantageously, and does it tend to reduce the costs of operation?

MAINTENANCE OF A PROPER DIFFERENTIAL BETWEEN MEMBERS

In order to be fair to the members it is essential that the method of pooling employed by an association provide the proper differential between members, when variations exist in the quality of the product and in the time of maturity because of varying efficiency of the individuals and because of differences in climatic and soil conditions.

Grading as a Basis for Pooling.—In selecting a pooling plan an association must decide upon the number and content of groups into which the fruit is to be sorted. The basis upon which this decision should ultimately rest is one of fairness to the members. No definite number of size and quality grades can be given that will be applicable to all fruits under all conditions, but the general principle can be laid down *that in so far as it is commercially feasible, grading should be carried to the point where all of the products in a given grade make the same appeal to the buyer.*

Market-price differentials are the starting place in determining the number of grades which it is feasible to establish as a basis for pooling. How many different varieties, qualities, and sizes do buyers recognize by differences in price when they are purchasing a given fruit? Table 2 gives some examples of differences in the prices

TABLE 2

EXAMPLES OF DIFFERENCES IN THE PRICES PAID FOR DIFFERENT SIZES OF A GIVEN QUALITY OF FRUIT

Kind of fruit	Variety	Quality	Size	Price	Period
Plums*	All	Best	4x4	$1.76 per box	1923 season
			4x5	1.43	
			5x5	1.32	
			5x6	1.32	
			6x6	1.14	
Oranges†	Navel	Fancy	Large	1.13	Third pool, 1922–23
			126's	1.65	
			Regular	2.24	
			Small	2.24	
Prunes‡		Sunsweet	20/30	0.095 per pound	1923 crop
			30/40	0.081	
			40/50	0.061	
			50/60	0.053	
			60/70	0.047	
			70/80	0.029	
			80/90	0.024	
			90/100	0.021	
			100/120	0.010	
			120/up	0.010	
Peaches (dried)	Muirs	A	Ex. Fancy	0.095	1923 crop
			Fancy	0.079	
			Ex. Choice	0.050	
			Choice	0.044	
			Standard	0.039	

Sources of data:

* Tudsbury, R. L. Pooling deciduous fruits and methods. The Blue Anchor **1** (5):13, 1924. (Prices received by the Loomis Fruit Growers Association.)

† Annual Report of the Glendora Citrus Association, 1922–23.

‡ California Prune and Apricot Growers Association; interview, J. T. Brooks, Sept. 15, 1925, San Jose.

§ California Peach and Fig Growers; interview, G. W. Danielson, Nov. 19, 1925, Fresno.

offered for fruit of like quality. Table 3 gives some examples of differences in the prices of fruit of like sizes but of different quality.

In general it may be said that the narrower the limits of a grade the nearer will each grower come to obtaining the full return which his particular product brings on the market. Of course, it would be uneconomical to grade beyond the point recognized by the buyers. For instance, if two sizes of oranges, 64s and 80s, consistently brought

the same price in all markets, the growers would gain nothing by pooling them separately, and the additional expense involved would reduce their returns. Likewise, it sometimes happens that although buyers may pay more for one box of pears in a given grade than for another box in the same grade, it is not worth while to provide for an additional grade, because (1) the association may have so little of one of the grades that it is not profitable to establish a separate pool for it, or (2) the additional returns obtained by making the two grades may be less than the additional expense involved.

TABLE 3

EXAMPLES OF DIFFERENCES IN THE PRICES PAID FOR DIFFERENT QUALITIES OF A GIVEN SIZE OF FRUIT

Kind of fruit	Variety	Size	Quality	Price	Unit	Period
Cherries*	Burbank	11 row	First	$2.86	Box	May 10–16, 1925
			Second	2.20		
Peaches*	Albright	55's	First	2.28	Box	Aug. 3–9, 1924
			Second	1.95		
Pears*	Bartlett	150's	First	3.66	Box	Aug. 3–9, 1924
			Second	3.01		
Plums*	Santa Rosa	4x5	First	1.95	Crate	June 23–29, 1924
			Second	1.30		
Oranges†	Navel	126's	First	1.65	Box	Third pool, 1922–23
			Second	1.18		

Sources of data:

* R. L. Tudsbury, Manager Loomis Fruit Growers Association, interview, July, 1925.

† Annual Report of the Glendora Citrus Association, 1922–23.

When a marked variation exists in the quality of different lots in the same grade, the practical effect of pooling is to lower the price of the finest fruit in a grade and to raise the price of the fruit that can just enter the grade. Under this condition pooling has a tendency to discourage the production of fruit of the highest quality. Since only the average price is obtained for any fruit contributed to a pool, a particularly skillful grower will not, under the above conditions, receive the full reward for his superiority. Under such conditions he may withdraw from the association, thus weakening it to that extent, or he may allow his fruit to deteriorate to the general level. On the other hand, an unskillful grower has no particular incentive to increase the quality of his fruit. Realizing that the identity of his fruit is lost in a pool, he may be content to hold his fruit up to that point which will just bring it above the lower limits of the grade, trusting that his more energetic neighbors will raise the average net price of the grade to a remunerative level.

EFFECT OF THE AREA IN THE POOL UPON THE MAINTENANCE OF A PROPER DIFFERENTIAL

Local Pools for Citrus and Deciduous Fruits.—In the cooperative marketing of fresh fruits the pooling area must generally be small in order to maintain the proper differential between members, because commercial grading cannot be performed with sufficient accuracy to detect the variations which buyers recognize in the quality of these fruits produced in different sections of the state. The possibility of obtaining recognized uniformity within a given grade is usually greater in a small than in a large territory. There are a number of reasons for this which deserve enumeration.

1. The factors which affect quality, such as soil, climate, and cultural practices are generally more uniform in a small than in a large area, although conditions within the same grove may vary widely, and the conditions between two groves in the same district at times vary as widely as those between two groves in widely separated districts.

2. The methods of handling fresh fruits in the packing house have an important effect upon quality.[4] Some local associations exercise great care in handling their fruit in the packing houses and attribute a considerable share of the high prices which they receive to this factor. Others are less particular in this regard, believing perhaps, that the additional price which they might receive would not justify the additional expenses which it would be necessary to incur.

3. Grading can be put on an equitable basis more readily in local than in general pools, because it can be performed more uniformly if done by a few individuals assembled in one place than if done in many widely separated places by people not in constant touch with one another.[5]

Community Packing Houses.—All of the citrus associations and about half of the deciduous-fruit associations grade and pack in community packing houses. In the San Joaquin Valley practically all of the associations that handle grapes on a pooling basis grade the product in community packing houses. In the deciduous-tree-fruit districts, however, community packing is a more recent development. It originated at approximately the same time and partly as a result

[4] Chandler, W. H. Fruit growing, pp. 665–704. Houghton Mifflin Co., Boston. 1925.

[5] See p. 10.

of the introduction of pooling, since it is very difficult even with an expensive field and platform-inspection system to have the various ranch packs sufficiently uniform for pooling. The perishability of certain kinds of tree fruits, such as plums, peaches, cherries, etc., has tended to delay the development of community packing of such fruits. In the hilly sections of the state, where the roads are often rough, growers cannot haul their unpacked fruit very far to the packing houses, because of the damage resulting from bruises, etc.

Another reason why the community packing house has been slow in coming in some sections is that many growers, particularly those having only small amounts of fruit, believe that they can do the grading and packing more cheaply on the ranch than it can be done in a community packing house, particularly if they already have packing and grading equipment. The community packing house must compete with the grower who packs his fruit on the ranch. The family labor of a small grower is often sufficient to grade and pack all or most of his fruit. In comparing the costs of the community packing house with those incurred by himself, he frequently includes in his own costs only his direct money expenditures. His own labor and that of his family, as well as the use of his ordinary farm equipment, are not considered as costs directly chargeable to grading and packing the fruit. Any savings which he may obtain in this way, however small, are usually regarded as clear gain, although the probabilities are that the actual reward which is received for the work of the members of the farm family is considerably below that paid in nearby packing houses. With the development of community packing houses it is becoming more difficult for ranchers to obtain the necessary extra help for grading and packing because work in the community houses is more attractive as well as more steady.

A community packing house is not an absolute requirement for successful pooling. One association, although it has a ranch pack, has nevertheless put out a sufficiently uniform product to permit successful pooling. An adequate inspection system which includes careful inspection both in the field and at the loading platform is mainly responsible for this association's success in pooling. Although field packs may be pooled with satisfactory results, the plan is not generally recommended. The tendency is for the individual grower to include as much as possible of his fruit in the higher grades. Furthermore, he is as a rule unable to obtain trained help year after year, or to train new help properly because he cannot furnish continuous employment for the entire season, and because he is not a specialist in packing methods. As a result of these conditions the quality of

the different orchard packs varies to a considerable extent, and only when particular care is taken by all of the members is it possible equitably to pool fruit that is graded and packed by individual growers.

General Pools for Dried Fruits and Nuts.—As compared with the local pools of the fresh-fruit association, the associations handling almonds, walnuts, raisins, peaches, figs, prunes, and apricots operate on the basis of a general pool; that is, all of the fruit of a given grade from a large area is pooled together. If grading is to be on an equitable basis in a general pool, the following conditions are essential:

(1) The character of the fruit must be such that its quality and size can be determined by tests that yield almost identical results when applied by graders who are not in constant touch with each other. When the pooling area includes the entire producing territory grading is generally performed in a relatively large number of receiving plants separated from each other by considerable distances. The grader is frequently unacquainted with the conditions in districts other than his own, and consequently his grading on the basis of quality, in the absence of mechanical or chemical tests, will be based almost entirely upon a comparison of the products raised in his district alone. If the average quality for the locality is relatively high there will be a tendency for less of the better fruit to go in the higher grades, and conversely, if the average quality is relatively low the tendency will be for more of the better fruit to go into the higher grades.

(2) The grading should be controlled by the central association. Equitable grading is particularly difficult when the local associations receive and grade the product without much central control. Under the present organization of the California Almond Growers Exchange, grading is performed by local warehousemen employed by the local associations, and too often their grading is inaccurate either because of lack of ability or because of conscious or unconscious bias. It is perhaps natural for a resident of a community, whose employment depends upon pleasing the local growers, to be lenient in grading so as to put into the higher grades as much as possible of the better product of his locality. Whatever the cause, it is evident that local control of grading is unsatisfactory in a general pool. On one occasion the California Almond Growers Exchange made advances on a lot of almonds received by a local association as first grade. Later it found that the almonds were far from first grade. Under such conditions dissension is likely to arise. The growers of the poor almonds would object if an attempt were made to collect the over-payments but the other members would be dissatisfied unless the collections were made.

EFFECT OF THE LENGTH OF THE POOLING PERIOD ON THE MAINTENANCE OF A PROPER DIFFERENTIAL

The length of the pooling period affects the maintenance of the proper differential between members when there is a variation in the time during which the fruit can be harvested because of differences in individual efficiency or differences in climatic and soil conditions. In actual practice the length of a pool varies from a car pool to a seasonal pool.

Length of the Pool Important Because Members Do Not Contribute Equally.—If each member of an association contributes an equal percentage of his entire crop to each pool, it will make no difference whether an association has one or several pools during the season, as far as the amount of money which each of the several growers will receive is concerned, assuming that the marketing can be performed as efficiently under one length of pool as under another. However, there are a number of reasons why members of an association do not contribute equal percentages of their crop at a given time. Among the more important are the following:

(1) Variations in time of maturity. Within a given pooling area, some growers, because of superior cultural practices or because of favorable location may mature their crops so as to enable them to reach the market at times when prices are normally high.

(2) Existence of climatic differences. Even though all of the fruit in a given pooling area matures at the same time, there may be variation in the climatic conditions necessitating differences in the time of marketing. Within certain limits fruit can normally be held for a time on the tree or on the farm after it is mature. The presence in some sections of early frosts, early rains, strong winds, or intense heat may make it necessary, however, for fruit to be harvested and sold as soon as it is sufficiently mature.

(3) Diseases. Again, certain diseases may cause the fruit to drop readily, or to deteriorate rapidly if left on the tree, thus necessitating prompt marketing.

(4) Pressure of other farm work. It may often be more profitable, considering the farm as a whole, to neglect the harvesting of a particular fruit at its proper time in favor of more important work with other enterprises.

Relation of Length of Pooling Period to Seasonal Variations in Prices.—The possibility of obtaining additional returns from market-

ing fruit at one time rather than at another depends on the existence of price changes which tend to be repeated year after year at about the same part of the season.

The prices obtained during any one period are, of course, affected by a variety of causes and furnish no indication of what may normally be expected in that particular period, as compared with other periods. If we have data for a series of years, however, we may obtain a typical figure for each period of the season. When determining the proper length of pooling period the management should

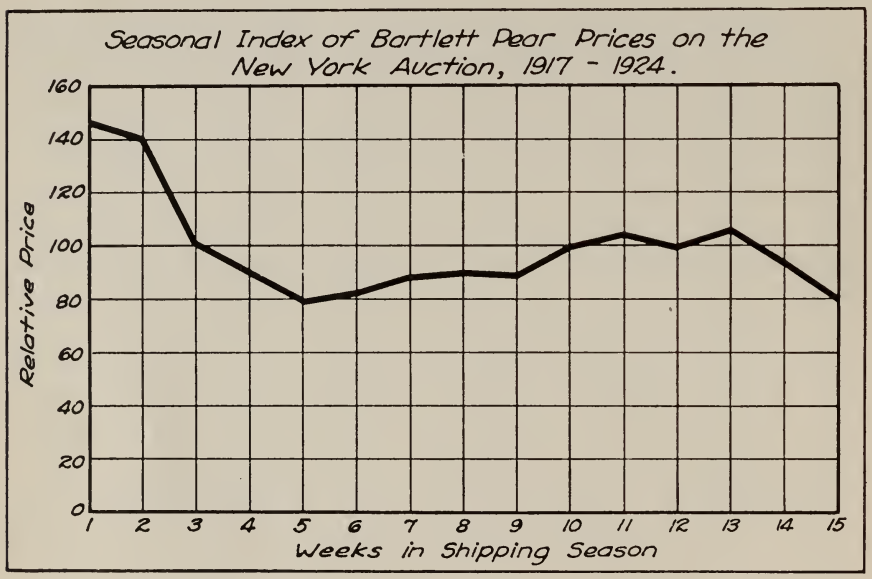

Fig. 1.—The prices of pears show a more definite tendency to follow a well defined seasonal movement than do those of many other fresh fruits.

ordinarily be concerned with normal price changes throughout the season as measured by an index of seasonal variation, rather than with the price changes which occur during any particular year.

When there is no definite seasonal variation in prices, long period pools are entirely fair to growers marketing their fruit at various times during the year, even though prices fluctuate considerably. On the other hand, when there is a definite seasonal variation in the prices of a commodity which matures at different times, assuming that the rate of marketing depends on the rate of maturity, it is necessary to provide for a number of pools during the season. Just how many pools are necessary will depend upon the extent of the normal price variations during the season.

The curve shown in figure 1 represents the seasonal variations in the prices of Bartlett pears on the New York market. It is readily seen that the growers who are able to get the bulk of their pears on the market in the first few weeks of the season will ordinarily obtain a higher price than if their fruit were sold in the other weeks. For this reason it is evident that a pool extending over the entire shipping season is unfair, and that a number of short pooling periods are necessary. However, certain associations handling Bartlett pears may well have seasonal pools. Suppose, for instance, that the shipments from one association began the fourth week of the season and continued for several weeks. Since the prices received during every week of this period will normally be somewhat similar or more or less irregular, the growers who ship the bulk of their fruit during the first part of this period will not be penalized by having their product pooled with those growers who ship during the last week. On the other hand, if an association's shipments began the first week of the season and continued until the fourth week, the growers who shipped early would lose money if the association had a seasonal pool, or even a four-week pool.

EQUITABLE DISTRIBUTION OF THE RISKS OF MARKETING

CLASSES OF MARKET RISKS

The risks which arise in the marketing of farm products may be classified as follows: physical risks, economic risks, and those risks arising out of the human element, such as losses resulting from dishonesty—theft, fraud, and the raising of checks—from bad debts, and from incompetency.

Physical Risks.—In their journey from producer to consumer there is constant danger that the quality of the fruits will be damaged. Fruits may freeze in transit during severe weather, or in the summer they may deteriorate because of faulty refrigeration. In other instances entire carloads of fruit are lost in wrecks or by fire. Even when the product is not injured in the accident, the delay may result in a material decline in its quality.

Economic Risks.—The chief characteristic of economic risks is that they turn on price movements. In general, the risks caused by price fluctuations are due to unexpected changes in demand and supply. Figure 2 shows the wide daily fluctuations in the prices received for Elberta peaches on the New York market in 1924. This figure clearly

indicates that the marketing of fruits necessarily involves risks. Insofar as market risks cannot be avoided they must be assumed by someone, and the cost of bearing the risk must be paid. If marketing is to be carried on most efficiently, effort must be made to eliminate as much risks as possible, and to minimize the effect of such risks as cannot be eliminated.

Pooling as a Method of Reducing Risks.—Fruit is not now handled on organized markets. No insurance is available for the major portion of the market risks, because such risks are "so inseparably connected

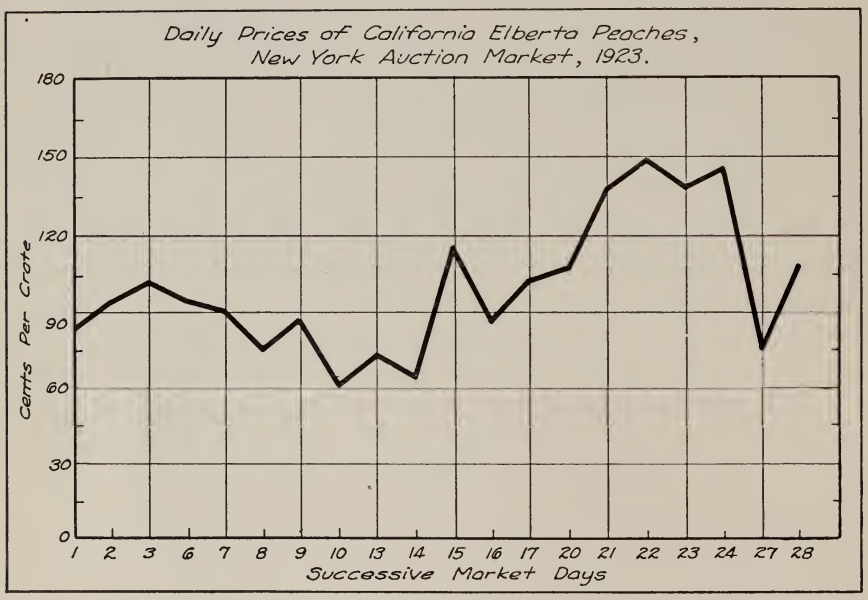

Fig. 2.—Fluctuations in daily prices of Elberta peaches give some idea of the importance of this type of market risk. An analysis of the data for a period of years shows that there is no normal seasonal variation.

with the general management of the business that an insurance company which undertook them would really make itself responsible for the business."[6] Pooling, therefore, offers the best means by which the individual grower is enabled to safely insure himself against these risks.

Pooling is very similar to insurance, in that it distributes among many persons the burden of losses which would otherwise fall heavily upon a few. The losses arising from market risks are likely to occur to any one of a large number of shippers, but actually they will fall

[6] Marshall, Alfred. Principles of economics, p. 398. Macmillan Co., New York City. 1920.

upon but a few individuals of the entire group. Pooling does not free the members from loss, but it means many small losses which are relatively easy to bear, in place of a few large losses which are extremely disastrous. It is entirely possible that every shipment of an individual grower might fall on a low market, while every shipment of his neighbor might fall on a high market. Or again, the poor fruit of one grower, sold on a 'bare' market, might bring more than the good fruit of another sold on a glutted market. Without pooling, a grower who raised very desirable fruit might sustain a serious loss for the season, while a grower who raised poorer fruit might have a profitable year. Pooling distributes the risks of marketing by providing that each contributor to the pool receive the same price per unit for the same grade of fruit. The loss resulting from low prices on a car of fruit, because of conditions over which the grower has no control, does not affect the owner of that particular fruit except as it reduces the average of the pool.

Effective Risk-taking Requires a Large Number of Units in the Pool.—If pooling is to be an effective insurance measure, the risk must be spread over a large number of units. If a small number of cars are shipped in a pool, a loss on any one car will affect the total returns to a considerable extent, but if there are a large number of cars, the effect of the loss of a single car will be materially reduced.

Assuming that the yield per acre and the acreage per square mile of territory are the same, the number of cars over which the risks may be spread depends upon two factors: (1) the amount of territory in the pool, and (2) the length of the pooling period. As far as the physical and moral risks are concerned, both means of increasing the number of units in a pool have approximately the same effectiveness.[7] But with regard to economic risks, it makes a considerable difference whether the number of units are increased by lengthening the pooling periods, or by increasing the amount of the territory in the pool.

Size of the Pool Important in Insuring Against Place Risks.—The amount of the territory included in the pool is of particular importance in insuring against place risks, those due to variations in the prices of a given grade of fruit in different markets at the same time. In general, however, prices in one market cannot get very far out of line with prices in other markets except for short periods. There are several reasons for this: (1) Market news service in the fruit industry is highly developed and is constantly being improved.

[7] As a general statement this is correct, but for isolated instances it would not hold true. For example, it may happen that in all of the main markets there is a severe cold spell which injures all of the fruit coming into these markets.

The federal and state governments have built up elaborate systems of market reporting, and many of the larger cooperative associations have developed their own services. (2) Diversion-in-transit privileges enable sales managers to adjust shipments to demand in the various markets, thus keeping them in fairly close balance. (3) Although most of the fresh fruits are of a perishable nature, present methods of refrigeration make it possible to ship them from one market to another if price changes make that desirable.

Development of New Markets Involves Place Risks.—The risks involved in the development of new markets are generally so great that it is necessary to include a large number of units in the pool in order to escape the disastrous effects of large losses. As the risk involved in the development of new markets is essentially a place risk, an increase of the area in the pool is necessary to provide a sufficiently large number of units. Because of rapidly increasing production, the fruit associations in California are being forced constantly to seek new outlets for their products. Until the products are established in the new markets, a price lower than that prevailing in the old markets is usually received, and often the price is so low that it scarcely pays the marketing expense. But if new outlets are to be developed this expensive pioneer work must be done. It would be unfair to ask a few men to send fruit to a new market, with the probability of a considerable sacrifice, in order to build up a trade beneficial to the entire industry. With a general pool the losses can be distributed among all of the members of the association instead of falling only on a few. It is not necessary, however, that an association handle all of the fruit under a general pool in order to distribute equitably the losses arising from the development of new markets. It is entirely feasible to have local pools for the established markets and a general pool for the new markets. This practice is employed by the California Fruit Growers Exchange with regard to its foreign sales.

Length of the Pooling Period Important in Insuring Against Time Risks.—The economic risks arising out of price changes over periods of time are more important than place risks because of the relatively wider fluctuation in the prices of a given product over a period of time than between markets at a given time. It is extremely difficult, if not impossible, effectively to control the fluctuations in the prices in a given market for an entire season.

A relatively long pooling period usually furnishes the maximum of insurance against this sort of risk. However, growers may obtain this same effectiveness of insurance with short pools if all of them

contribute equal proportions of their crops to each pool. On the other hand, the risks of the individual members are increased if the proportions of their respective deliveries to each of several short pools vary from that of the association as a whole.

Taking into consideration only this point—the effect of the length of the pooling period upon the equitable distribution of risk—the pooling period should be at least long enough to eliminate the short-time fluctuations in price caused by temporary changes in demand and supply, such as rapid changes in the weather, delays, and glutted or 'bare' markets.

EXPENSES OF POOLING

The problem of prorating equitably the expenses incurred by a cooperative marketing association among the growers is frequently difficult. This difficulty is caused mainly by two conditions: (1) the costs of handling different units of a given grade of fruit may vary to a considerable extent; (2) the total cost of handling a given grade of fruit cannot be definitely isolated from that of other grades, and consequently the indirect costs must be allocated on some predetermined basis.

VARIATION IN THE COSTS OF HANDLING DIFFERENT UNITS OF A GIVEN GRADE OF FRUIT

In this regard there are a number of different situations in California; a local pool with only one packing house, a local pool with two or more packing houses, a general pool with the packing houses owned by the local associations, and a general pool with the packing houses owned by the central association.

Local Pools with One Packing House.—When the pooling area is small and contains only one packing plant, which is located at the common shipping point of the members of the pool, the problem of prorating equitably the costs is relatively simple. In the local associations of the California Fruit Growers Exchange and the California Fruit Exchange, in which this situation exists, each grower bears the costs of hauling his fruit from his ranch to the packing house. Since all of the fruit is handled in one packing house, the total cost of handling a given grade of fruit at the plant can be distributed fairly among the units of that grade on the basis of a flat rate.[8] Thus each grower benefits according to his location.

[8] The expressions 'flat rate' and 'flat basis,' when used in this way, mean that each unit of the product bears the same proportion of the total cost.

Local Pools with Several Packing Houses.—In a few of the local associations handling fresh fruits, there are two or more packing plants. In one case, for example, one association owns and operates three packing plants in one pooling area. The individual grower bears the costs of hauling his fruit from his ranch to the packing house. Each grower usually delivers his fruit to the packing plant nearest to his ranch. The costs incurred by the association in handling the fruit are prorated among the growers on a flat basis, irrespective of the plant to which the fruit is delivered.

General Pool with Packing Houses Owned by Local Associations.—In the California Almond Growers Exchange, for example, most of the almonds are handled in a number of packing plants owned and operated by the local associations, although all of the almonds of a given grade are pooled together. In these local almond associations each grower bears the costs of delivering his almonds to the packing house, and the cost of operating a particular packing house is charged against only those almonds which are handled in it.

General Pool with Packing Houses Owned by Central Association.—In associations such as the California Prune and Apricot Growers Association, California Peach and Fig Growers Association, and the Sun-Maid Raisin Growers of California, the pooling area extends over much of the state, and the packing plants, located at different points, are owned and operated by the central organization. The California Prune and Apricot Growers Association, for example, operates twenty-six packing plants and four receiving stations, and has contracts with five packers to receive and pack its members' fruit. In addition, the Association provides shipping facilities at a number of places distant from its receiving stations or packing plants. That part of the fruit which is received at places other than the packing plants must be shipped to these plants for processing and packaging. The Crop Marketing Agreement of the Association provides that the Association pay the cost of transportation from the common shipping point of the grower to the packing plant. In this Association, therefore, each member bears the costs of hauling his fruit from his ranch to the local shipping point. All costs thereafter are paid by the association, and the total cost of handling each grade of fruit is prorated to the growers on the basis of the number of tons delivered. Thus, with the exception of local hauling, each member in the California Prune and Apricot Growers Association pays an equal cost per ton for a given grade of fruit.

The costs incurred by the association in handling each ton of a given grade of fruit, however, are unequal. For example, when a

grower in Santa Clara County delivers his fruit to a packing house in San Jose the association has no transportation charge to pay, assuming that the prunes are sold f.o.b. packing house.[9] But when a grower in San Joaquin County delivers his prunes to Acampo, the association pays the transportation costs from there to San Jose.[10] Again, the costs of handling the fruit are greater in certain packing houses than in others. Variations in costs may be caused by differences in the volume of fruit handled, differences in the efficiency of the packing house superintendents, differences in the layouts of the plants, etc.

The foregoing illustration indicates an important problem in the pooling of expenses with which those associations having a general pool are concerned, namely, shall the costs of transportation from each grower's nearest shipping station to the packing plant, and the costs of handling the fruit in each of the several packing plants be assessed alike per physical unit, or shall each unit of fruit bear the costs that are separately attributable to it?

Pooling Transportation Costs.—The first part of this problem is becoming increasingly important among the dried-fruit associations because of the tendency toward consolidation of packing plants and receiving stations. To what extent will consolidation be carried if each member bears the costs of transporting his own fruit to the packing plant? Consolidation will certainly be beneficial to those growers located near the central packing plant, assuming that consolidation will result in a reduction in the costs of receiving, grading, processing, and packaging. Those growers located at a distance, however, might receive a lower net return for their fruit, even though the association returned them a higher price, because out of this increased return would come the additional cost of hauling to a more distant plant; and if the grower's ranch were far from the packing house, his additional cost might be more than the increased price received. Consequently, it might be more profitable for him and his neighbors to build a packing house in their immediate vicinity, even though the cost of operating it were higher than the amount they were charged at the central plant.

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[9] Equality Brand is quoted f.o.b. Association's packing house; Sun-Sweet Brand is quoted f.o.b. San Francisco dock. (Anonymous. New crop prune selling prices. Sunsweet Standard, **9** (3): 6. 1925.)

[10] The Association has no packing plants in Sacramento, San Joaquin, Stanislaus, Merced, and adjacent counties, and, therefore, the fruit of its members located in these counties is shipped to a packing plant in another section, usually to San Jose. (Anonymous. First advance on 1925 prune crop. Sunsweet Standard, **9** (3): 1. 1925.)

ALLOCATING INDIRECT COSTS

Difficulty of Isolating the Cost of a Particular Grade of Fruit.—The total cost of handling any one grade of fruit cannot be definitely isolated from that of other grades handled by the aid, in whole or in part, of the same business ability and organization, the same labor, and the same machinery and equipment. The direct costs, such as the costs of packing material and labor that could be dispensed with if this particular grade of fruit were not handled, can indeed be determined, "because the materials and services they represent are physically identified with some unit of product in a visible and unmistakable fashion."[12] The Association's minimum charge on a given grade of fruit must be at least sufficient to cover the direct costs of that particular fruit, if the fruit is to be handled at all.[13] The situation is somewhat different with regard to the indirect costs, such as salaries and expenses of the administrative, sales, and field departments; interest on capital; depreciation on buildings and machinery; etc. The total costs, both direct and indirect, must of course be borne by all of the growers. The crop contracts usually provide that the proceeds from the sale of the products, less each grower's pro rata share of all expenses, shall be paid to the growers according to the quantities and grades of fruit delivered. The difficult problem is to determine just what is each grower's pro rata share of the indirect expenses of the organization.

Methods Used in Allocating Indirect Costs.—The methods used by the associations in California in allocating the indirect costs among the various grades of fruit vary to a considerable extent. In general, it may be said that the indirect costs of handling a given kind of fruit are prorated among the various grades, either on the basis of a flat rate per unit, on the basis of sales value, or on a combination of the two. The first method—that of allocating the indirect costs on the basis of a flat rate per unit—is followed by the California Fruit Growers Exchange. The indirect costs incurred in handling oranges, for example, are charged to the growers on the basis of a flat rate

[12] Clark, J. M. Economics of overhead costs, p. 116. The University of Chicago Press, Chicago. 1923.

[13] Some associations have handled fruit for a time at a loss, but if their charges were consistently lower than the direct costs involved, they have either increased their charges or discontinued the handling of the fruit. For example, Malagas, Feherzagoes, and dried wine grapes of every variety were omitted from the 1923 Crop Contract of the Sun-Maid Raisin Growers of California because the handling of them usually entailed a loss on the part of the association. (Anonymous. Sound contract is basis of association. The Associated Grower, 5(4): 8. 1923.)

per box, irrespective of the quality and size of the oranges. Thus low-quality fruit is charged the same amount per box as high-quality fruit. The California Fruit Exchange allocates its costs on the basis of sales value. It deducts 7 per cent of the gross receipts as full compensation for its services. Thus the high-quality fruit bears a larger charge per box than the poor-quality fruit. The California Prune and Apricot Growers Association allocates part of its indirect costs on the basis of a flat rate per ton, and part on the basis of sales value. For instance, each ton of prunes is charged the same amount for packaging and processing; but the administrative and sales expenses are pro-rated on the basis of sales value.

Allocating Indirect Costs among Different Kinds of Fruit.—Many of the fruit associations in California handle more than one kind of fruit, and their problem of allocating the indirect expenses is, therefore, twofold: first, upon what basis are the indirect costs to be prorated among each of the different kinds of fruit; and secondly, upon what basis are the indirect costs chargeable to a given kind of fruit to be prorated among the various grades? The second part of this problem has already been discussed. We have now to consider the first part.

In the California Prune and Apricot Growers Association, for example, which handles prunes, apricots, and apricot pits, the indirect costs are allocated as follows: In those plants which are used entirely for one commodity, the overhead expenses are charged to that commodity; but when the plant is used for, say, prunes and apricots and apricot pits, the overhead expenses are prorated among the three commodities on the basis of the direct labor cost of handling them. The cost of administration of the Growers Packing and Warehousing Association is prorated among the commodities on the basis of the total plant costs. That portion of the total overhead cost allocated to prunes, for example, is then prorated among the various grades on a tonnage basis, as has been explained. The administrative and selling expenses are prorated among the three commodities on the basis of their sales value.

In the local citrus-packing houses the indirect expenses are generally prorated between the different kinds of fruit handled on the basis of the total direct costs. In the California Fruit Growers Exchange, the expenses of the central exchange and of most of the district exchanges are divided between oranges, lemons, and grapefruit on a weight basis. In the California Fruit Exchange, however, the expenses are prorated on the basis of sales value.

Advertising.—The cost of advertising is one of the most difficult expenses to prorate equitably. The associations which handle several kinds of fruit usually advertise all of them under one brand; for example, in the California Prune and Apricot Growers Association, both prunes and apricots are advertised under the "Sunsweet" brand. This association charges prunes, for instance, with only that portion of the cost that is actually expended on advertising prunes. The California Fruit Exchange, which handles many kinds of deciduous fruits under the Blue Anchor brand, prorates the cost of such advertising as is done to the various fruits on the basis of sales value.

After each kind of fruit is assigned its prorata share of the total advertising expense, the problem presents itself of determining how the expense assigned to a given kind of fruit shall be distributed among the various grades. The first question to be decided is whether to charge this cost to only those grades advertised or to charge it to all the grades. The latter method is followed by most of the associations in California, such as the California Fruit Growers Exchange, the California Fruit Exchange, the California Almond Growers Exchange and the California Prune and Apricot Growers Association. Their main reason for doing this is that they believe that advertising is beneficial to the lower quality fruit as well as to the higher quality fruit. Their argument is that advertising results in an increase in the demand for prunes, nearly as much as it does for Sunsweet prunes, for instance. Furthermore, it is claimed that an increase in the consumption of Sunsweet prunes will result in an increased consumption of prunes of lower quality. On the other hand, the Sun-Maid Raisin Growers of California charge the advertising expense to only those raisins advertised.[14] The second question pertains to the basis upon which the advertising expense is to be distributed among the various grades to which it is charged. The California Fruit Growers Exchange and California Almond Exchange distribute this expense on a flat basis; the California Prune and Apricot Association and the California Fruit Exchange on the basis of sales value.

How Should Costs Be Allocated?—The foregoing discussion indicates that no single method of distributing the costs is applicable to all associations. The general principle is that the direct expenses should be charged to the particular grade of each kind of fruit for which they were incurred, and that the indirect expenses should be allocated in a uniform fashion on some basis that seems reasonable and appropriate. According to Clark,[15] "There are four logical bases

[14] Anonymous. New advertising increases sales at less expense. Sun-Maid Business, Dec. 15, 1924, p. 8.

on which overhead costs may be apportioned. These are: (1) ability to pay . . . ., (2) causal responsibility . . . ., (3) benefit or use; (4) stimulus to improved utilization.'' The indirect expenses incurred in receiving, grading, processing, and packing are generally allocated on the basis of causal responsibility. This method involves considerable dependence upon the ''operator's judgment.'' ''Here the question is usually one of finding something which controls the amount of these indirect costs, and the test would be that they would vary more nearly with this one variable than with any other. . . . . Any selection that may be made is in the nature of a compromise, since some expenses vary more directly with labor time, others with direct expenses, others with machine hours, and so on.''[16] Since any grade of a given fruit is usually equally responsible for the overhead costs of a packing plant as any other grade, the practice is to prorate the costs on the basis of a flat rate per physical unit. This same method is followed by some associations in allocating the indirect costs of selling and administration. Other associations use the basis of ability to pay or of benefit received. For example, the method of allocating the costs of administration on the basis of sales value seems to rest solely on the ability to pay. This method of allocating the costs of selling, however, may rest on both the ability to pay and the benefit received. For instance, it may be contended that a unit of the better grades of fruit can pay more of the indirect expenses than a unit of a poorer grade, or that a unit of the better grade fruit receives more benefit from an increase in the demand resulting from advertising and sales promotion.

The tendency, resulting from the practice of prorating the indirect expenses of the association on the basis of a flat rate per physical unit as compared with the basis of sales value, is to encourage the production of high-quality fruit. When the indirect expenses are prorated on the basis of sales value, a pound or package of the high-grade fruit is charged more than a similar unit of the lower-grade fruit. To the extent that this narrows the price differential between the grades to the grower, it discourages the production of high-quality fruit. From the standpoint of the industry as a whole, the production of high-quality fruit is desirable, and this is perhaps the most important justification for charging the indirect expenses of an association on the basis of a flat rate.

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[15] Clark, J. M. Economics of overhead costs, p. 32. The University of Chicago Press, Chicago. 1923.

[16] *Op. cit.*, p. 231.

RELATION OF THE POOLING PLAN TO ORDERLY MARKETING

To obtain the most effective operation of the association it is necessary that the management exercise a considerable degree of control over the products of its members in order to promote orderly marketing, and to develop new markets.

Orderly Marketing.—In order effectively to distribute the crop as to time and place, and thereby obtain the largest net returns, it is essential that the control of the product be transferred from the members of a cooperative marketing association to the management. The individual grower has frequently neither the time nor the ability, even though the association provides him with the necessary information, properly to distribute his product. With perishable fruit crops he is especially busy with harvesting at just the time the marketing of it requires particular attention. With other crops the pressure of other farm work requires his attention at the time it is ordinarily being marketed.[17]

Ordinarily the output of a farm is so small that the individual grower cannot give much time to marketing. When, however, the products of many farms are considered, it may be well worth while to build up an organization that will devote all of its time to this work, and be sufficiently large to permit a considerable degree of specialization. Furthermore, a good farmer is frequently a poor salesman because the management of a farm requires different abilities than the marketing of the products produced on it.

Experience has shown that when individual growers determine the volume of products to be marketed at a given time and place, markets are likely to become disorganized and violent price fluctuations are likely to occur. For this reason the practice of delegating the control of the fruit by the members to the management has become fairly well established among the associations in California. For example, in the California Fruit Growers Exchange, "The line of development has been increasingly for the grower to delegate authority as to the time of picking to the local association, for the local association to delegate all authority as to place of sale and price of the product to the district exchange, in order that the latter may cooperate more effectively with the central exchange in securing more

[17] Hibbard points out that "few farms are so organized as to leave any considerable part of the farmer's time free for the consideration and work of marketing." (Hibbard, B. H. Marketing agricultural products, p. 287. D. Appleton & Co., New York City. 1921.)

uniform distribution throughout the year and throughout the area of possible consumption."[18] This delegation of authority has taken place simply because it has been their experience that the district exchange manager can get a higher price for their fruit than they can themselves; for as a rule, the district exchange manager is well trained for the work of directing sales, and is able to spend all of his time at it.

Development of New Markets.—Because of the rapidly increasing production the cooperative fruit-marketing associations in California are forced to develop new markets, both at home and abroad. This work demands a high degree of skill and involves considerable expense. Therefore, the decision of whether to develop a particular market or not cannot safely be left to the individual growers, particularly when the return from the sale of fruit in a new market is apt to be lower than that received in an established market.

Pooling the Most Satisfactory Method of Transferring Control.—Pooling is generally the most satisfactory method of transferring the control of the product to the management because under a pooling system the grower is not especially interested in the market to which his particular product goes nor the price it brings; what he wants is the highest possible average price for the pool, because he knows that in this way he will receive the highest return. Without pooling, each grower would be vitally interested in the price his own fruit brought. Consequently he would be more apt to insist on having a considerable voice in deciding the market to which his fruit was to be sent and the time of shipment. The result would be a chaotic market condition; too much fruit would be shipped early or too much would be shipped late; some markets would be glutted and others would have an insufficient supply.

However, the different methods of pooling vary greatly in the extent to which they give control to the management. It is, therefore, necessary to analyze the effects of the area in the pool and the length of the pooling period upon the extent of this control.

Effect of the Area in Pools upon the Control of Distribution.—The amount of territory included in the pool exerts its main influence upon the extent to which growers are willing to delegate the control of the distribution of their products among the various markets to the management. When pooling is on a local basis, the effectiveness with which the sales agency can distribute the product among the

[18] Camp, W. R. The organization of agriculture in relation to the problem of price stabilization. Journal of Political Economy, 32: 289.

various markets may be limited, because it is to the interest of the local association to obtain the highest return for its products, irrespective of the returns obtained by other locals. Consequently, a local association may demand that its particular product be sent to a certain market, believing that it will obtain a higher price there, even though such action is detrimental to the industry as a whole. Unless, however, a majority of the locals regularly exercise their rights to determine the place of sale of their products, the existence of local pooling is not a serious handicap to effective place distribution. Orderly marketing depends upon the proper distribution of the entire crop, of a given grade to be sold at a given time, among the various markets, not necessarily upon the shipment of a fruit from a particular local association to a particular market. Consequently, the request of any given local that its fruit be shipped to a certain market may be granted without disrupting the orderly flow of the crop as a whole, provided, of course, that many other locals do not name the same market in their requests. When only a few locals exercise this privilege, they are almost sure to be the chief losers if their actions result in an over-supplied market, because the oversupply for which they were responsible will result in a lower price being paid for their goods. Experience has taught the local associations that their own best interests are advanced by delegating the control of the distribution of their product to the management. It is for this reason that both the California Fruit Growers Exchange and the California Fruit Exchange, in which pooling is on a local basis, are able effectively to distribute the products they handle among the various markets.

Effect of the Length of the Pooling Period upon the Control of Distribution.—The length of the pooling period influences the extent to which growers are willing to delegate the control of the distribution of their product over a period of time to the management. When the pooling period is short the natural tendency is for the members to try to regulate their deliveries of fruit according to the expected fluctuations in the market prices, attempting to have the larger proportion of their product reach the market when the price is high. Carried to its logical conclusion this would mean that many growers with inadequate knowledge and acting independently would control the distribution of the product over a period of time, instead of a well-informed sales agency. On the other hand, the seasonal pool may be equally disadvantageous in this regard. If the grower knows that he will receive the average price for the season irrespective of the time his fruit is sold, he will regulate his deliveries to the associa-

tion according to his own best interests, which may or may not be to the best interests of the association.

At the first glance it might appear that in a seasonal pool the growers would willingly delegate the entire control of their fruit to the management. In such a pool, the individual grower does not benefit from having his particular fruit fall on a high market, except as it increases the average return for all. On the other hand, he is greatly interested in having the association obtain the highest average price for all of the fruit. Consequently, it would seem that if the average price can be raised by allowing the management to distribute the fruit in such a way as to supply the most urgent demands, the growers would be encouraged to deliver as little or as much fruit as is wanted.

A grower's returns, however, depend not only upon the price received, but also upon the amount of each grade contributed; and he naturally desires to have as large an amount as possible in the highest grades. Particularly in the case of some fruits, each grower wants to get his fruit off as soon as it is mature. If it continues to hang on the tree after that time he must assume such risks as dropping, freezing, bruises caused by winds, deterioration in quality, etc.

The difficulty in controlling the delivery of fruit is accentuated when the conditions in the pool vary widely.[19] For example, the oranges in the groves of a few members may drop easily, causing them severe loss unless they can pick a large proportion of their crop early. But if the management allows them this privilege and refuses to allow the other members the same right, friction and discord are apt to arise. On the other hand, if all are allowed to deliver the bulk of their oranges early, the packing house facilities would be overcrowded, and the association would be forced to put an unduly large amount of its oranges on the market at one time.

A number of short pools in the place of a seasonal pool offers a means of lessening this particular trouble. Suppose, for example, that the management of an association having monthly pools, decides that it is advisable to market 20 per cent of its oranges during February. It is immaterial to them from what groves the fruit comes as long as the required amount of the total association's crop is delivered. While some growers may want to deliver 40 per cent of their crop to this pool, others may be willing to delay picking their oranges in anticipation of a higher price in a later pool. Within limits the heavy deliveries of some members may be offset by the light deliveries of

[19] Here the area in the pool affects distribution over a period of time.

others, so that the required percentage of the total crop of the association is moved at the most advantageous time. Now if the required amount of fruit is delivered during the pool, there seems to be no good reason why one member should not deliver more to the pool and another member less if they so desire. The practical difficulty relates to the balancing of those who want to ship less against those who want to ship more so as to maintain the desired amount. If it is agreed that the association should control the time and amount of total delivery, the problem may be solved by designating certain limits which no member may exceed. At the opening of the pool, after the management had decided upon the amount that should be shipped, the members could be asked to express their desires regarding the amount they want to deliver. If the total which the members wish to ship is more or less than the determined amount, those members who exceed or come under the allotted percentage may be asked to decrease or increase their deliveries accordingly.

But the very fact that there is an opportunity to get a higher return from one pool than from another encourages the members to speculate. Each grower tries to predict the times when prices are high, and to ship a large portion of his crop then. To speculate freely one must control his own product, so in this respect the short pool takes the essential control out of the hands of the management. Furthermore, if it appears that the average return for a particular pool is going to be high, there will be a general rush on the part of the growers the last few days to get a large proportion of their crop in that pool.

In addition to wanting to get a high price and a large proportion of his crop in the best grades, the grower is interested in the costs involved, and one of the costs which he must be concerned with is 'opportunity costs.'[20] The raising of a particular kind of fruit, for example, is often only one of the major enterprises on a farm. The farmer's chief interest is to obtain the highest net return from his farm as a whole, and not necessarily to obtain the highest possible return for any single enterprise. Consequently it may be more profitable for a member of the California Almond Growers Exchange, for instance, to delay the delivery of his almonds to the Exchange in order to devote his time and equipment to other farm work. Although

[20] "Practically every agent of production has many possible uses. Since it is scarce, it is impossible to employ it fully in all of them. To use it for any one purpose means to forego the opportunity of applying it to other purposes. Its use therefore *costs* whatever it might have been worth if it had been put to its possible alternative uses." (Bye, R. T. Principles of economics, p. 308. Alfred A. Knopf, New York. 1924.)

such a practice may be more profitable to the individual grower, it often interferes with the orderly marketing of the crop. The demand for almonds, for example, is essentially a seasonal one; that is, the great bulk of the unshelled almonds are consumed during the holiday period and it is difficult to sell them unless they are on the market before that time.

Because some members habitually deliver their almonds too late for the holiday trade the Exchange, in 1922, instituted the practice of establishing early and late pools.[21] The first is closed by about November 1 in order that all of the almonds delivered to it may reach the eastern markets in time for the holiday trade. Almonds that are delivered after November 1 are assigned to the second pool, and since the net returns received for almonds in this pool are both smaller in amount and less promptly made, the establishment of two or more pools during the season is an effective means of inducing the members to make early deliveries.

In 1926 the Sun-Maid Raisin Growers of California established early and late delivery pools for sodas, sulphurs, oil Thompsons, oil Sultanas, and currants.[22] From a marketing standpoint it is desirable for the association to have the products delivered to it early in the fall. It is believed that the returns will generally be higher on the early pools of these raisins than on the late pools.

COSTS OF MARKETING

Improvement in marketing involves both orderly marketing and the economical performance of the essential marketing services. This section will be confined to a discussion of the costs of marketing as affected by (1) the number of grades, (2) the size of the pooling area, and (3) the length of the pooling period.

Relation of the number of Grades to the Costs of Marketing.—As the number of grades into which the fruit is sorted is increased, certain costs such as grading and accounting increase because of the additional labor and equipment required. For example, in the grading of oranges the sorting of each quality grade into the various sizes requires a separate mechanical grader. Thus, an association having five quality grades will require more machinery than an association handling the same quantity of fruit that has only three quality grades.

[21] Tucker, T. C. A report of 1922 sales. The Minute Book, 1 (4): 3. 1923.

[22] Anonymous. Members will benefit from revised bleached pool procedure. Sun-Maid Business, July, 1926, p. 11.

The number of laborers required to sort the fruit according to quality is also increased as the number of quality-grades is increased. Furthermore, the accounting costs are larger with many grades than with only a few.

Relation of the Pooling Area to Efficient Operation of the Packing Plant.—In each of the fruit pooling areas in California there is found at least one plant in which the product is prepared for the market. In many pooling areas there are two or more plants; but in no instance is there only one plant engaged in preparing for sale the fruit produced in more than one pooling area. The main reason for this seems to be that the additional time and labor involved in keeping separate the fruit from two or more pooling areas that was prepared in the same plant would involve a cost greater than any corresponding gain that could be obtained by doing so.

The chief advantages of a large plant in the marketing of fruits are the economy of skill and the economy of machinery. If the product is of such a nature that considerable savings can be made by the operation of a large plant, such as is the case in the seeding of raisins, the shelling of almonds, and the manufacture of by-products, it would seem that the necessary amount of fruit can best be obtained by extending the area of the pool. This principle is followed by the associations in California. For example, a pooling area covering considerable territory is universally employed by the associations in order to obtain a sufficient volume of fruit to utilize the by-products economically. The local associations of the California Fruit Growers Exchange, while pooling their domestic fresh-fruit shipments on a local basis, employ the general pool for their lemons and oranges which are manufactured into by-products.[23]

Whenever the character of the product is such that a large plant is more economical in preparing it for the market, it is usually well adapted also to a general pool, in that it can be graded with sufficient accuracy so that buyers will not differentiate between the products in a given grade from different sections. This is true mainly because a large plant is not required unless the form of the product is changed, necessitating elaborate machinery, and whenever the form of the product is changed the tendency is for minor differences to be eliminated and the finished product to become a uniform blend.

On the other hand, fresh fruits can be handled efficiently in a packing house of moderate size because the machinery required and

[23] The local citrus associations, for example, have organized the Exchange Orange Products Company and the Exchange Lemon Products Company for the purpose of manufacturing by-products from cull oranges and lemons.

the processes involved are not intricate. A moderate-sized orange packing house, for example, will give constant employment to the best machines known for every process, so that a very large packing house is merely the equivalent of several parallel smaller packing houses under one roof. With regard to graders, for instance, it takes only a small volume of fruit to give constant employment to one unit, which is complete in itself; and as a rule a larger volume of fruit is taken care of by the use of multiples of this unit.

Relation of the Pooling Area to the Costs of Selling.—The economies of selling are among the chief causes of the tendency toward large-scale cooperative marketing associations. The activities of such associations as the Sun-Maid Raisin Growers of California and the California Fruit Growers Exchange would have been impossible if the costs could not have been spread over a large number of units. The volume of fruit necessary to secure all of the economies in selling may be obtained with medium-sized pools, because the volume of fruit handled by a sales agency may be increased as readily by a federation of local-pooling areas as by enlarging a given pooling area. For example, in the California Fruit Growers Exchange and the California Fruit Exchange a sufficient volume of fruit for economical operation is obtained by a federation of local associations, each of which pools its products independently of the others.

Even under a federation, however, a pooling area of considerable size is desirable. The California Fruit Exchange, for example, has found that in the sale of fruit "there is a big advantage in establishing a brand and being able to have a car of this brand on the market every day."[24] The buyer of fruit desires to have a consistent supply of a given brand of fruit in the market so that he is assured that he can buy the same kind and quality of fruit every day, and by so doing build up a systematic and consistent channel of trade. Furthermore, consistent daily shipment of a given brand of fruit enables the buyer to purchase his current requirements without spending a great deal of time in the examination of the fruit before buying it. According to Mr. Culver, the jobbers' costs are increased because of the additional work required to sell the 'tail-ends' of the many different lots which they buy. If each car contained one brand, the buyers could go back on the market the next day and purchase the same brand as they handled the day before, and in this way they would have no clean-up sales.

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[24] Culver, E. S. How fruit is handled on eastern markets. Blue Anchor, 1 (9): 13. 1924.

Again, in the sale of fruit at auction, the costs are increased by having a large number of brands in one car. Obviously, it requires a larger catalogue to list a car containing many brands than it does one containing only a few brands. In one exceptional case, there were 300 different lines of fruit in a single carlot shipment from one association. The auction catalogue of this shipment was fifteen pages in length.[25] On the other hand, a carlot shipment of fruit from associations having a well-developed pooling plan may usually be listed in a two-page catalogue.[26] It also requires considerably more space to display properly a carlot of fruit with many lines on the auction company's floor than is required for a car with only a few lines. In addition, about twice as much time is required to unload and sort a "drug store" car, as is required for a standardized car.

Relation of the Length of the Pooling Period to the Costs of Marketing.—The costs of operating a packing house are influenced by the uniformity of the flow of fruit through it. A packing house is built and equipped to handle approximately a certain amount of fruit with optimum efficiency. Any amount less than that sufficient to operate the plant to optimum capacity means an increased cost per unit. On the other hand, a supply of fruit so large that the packing house is taxed beyond its optimum capacity, also increases the per-unit cost of operation.[27] To otain the most economical operation it is necessary that the management be given the power to control the flow of fruit from the members to the packing house. The extent to which the members are willing to give the management this necessary control, however, is influenced by the lengths of the pooling periods. This subject was discussed in the section on orderly marketing on pages 26 to 31.

A very short pooling period, such as one day, complicates the physical handling of the product. A volume of fruit just sufficient to completely load one or more cars may not be received during the day. Consequently, some of the fruit must be carried over on the packing-house floor the following day, or shipped out in less than

[25] Read, F. W. New standardization work in Placer County. Blue Anchor, 1 (1): 6. 1924.

[26] Read, F. W. How deciduous fruit is sold—with special reference to the auction. Blue Anchor, 3 (2): 24. 1926.

[27] In discussing the relation between fluctuations in the utilization of a given plant and costs, Clark says, "Because these forces are so complex, differing from plant to plant, no generalization can be made as to just how the curve of operating expense behaves when plants work at different percentages of their normal capacity, except the fact that when the overload becomes great, costs always increase faster than output." (Clark, J. M. Economics of overhead costs, p. 94. The University of Chicago Press, Chicago. 1923.

carlots. If part of the fruit is carried forward into the next day, it means either keeping track of that particular lot until it is sold or inventorying it into that day's pool at some arbitrary price.

The accounting expense is also increased as the number of pools during the season is increased. Each pool involves a complete settlement to the members. Thus two pools during the month necessitate nearly twice as much work as one pool. This expense in the short pools is somewhat offset by the additional costs of making advance payments when the pooling periods are long.

PAYMENTS TO GROWERS

TIME OF MAKING PAYMENTS TO GROWERS

Pooling Results in a Delay in Making Returns to Growers.—When the growers' fruit is pooled, payment cannot safely be made in full until the returns have been received from the sales of the bulk of the fruit within the pool. The length of time before the final payment can be made depends upon the length of the pooling period; and when the pooling period is long, the resulting delay in making the final payment is apt to be a source of irritation. Farmers are not so well accustomed as are men in many other lines of business to wait for their money for some little time after selling their products. Private buyers have almost always furnished the farmer with a cash market, and consequently he is apt to chafe under the strain of having to wait for his money, especially when he knows that he could have obtained cash if he had not been in the pool. In order to expedite payments some associations have adopted short pooling periods, even though they are disadvantageous in other respects. Several of the managers of local citrus packing houses, for example, gave this as their main reason for changing from the seasonal pool to the short pools.

The management of the California Almond Growers Exchange also believes that early payment is an important reason for having more than one pool during the season. Prior to the establishment of the early and late pools by the Exchange in 1922, the grower who delivered all of his crop early was forced to wait for his final payment because of the late deliveries of his neighbor. This often meant a wait of a year or more. As compared with this, the first pools on the major varieties of the 1922 crop were closed early in the spring of

1923, although the final payments on the second and third pools were not made until nine months later.[28]

Payments to Growers when the Pooling Period is Long.—When the pooling period is longer than a month or six weeks, substantial advances are usually made to the members. The old contracts of several of the dried-fruit associations provided for certain specified minimum advances to be made at the time of delivery.[29] This specified minimum advance was the cause of much trouble. The amount was frequently higher than the price for which the products actually sold, and banks became reluctant to make loans under such a contract. Because of this the specified minimum advance has been eliminated and in its place has been inserted a clause which provides for as substantial an advance payment as the market and financial conditions will permit.

The first advance on each of the various grades should ordinarily be in proportion to the anticipated value of each grade. This, however, has not always been done. For instance, the first advance on each of the various sizes of Sunsweet prunes from 1921 to 1923, inclusive, seems to have borne no close relation to the opening price,[30] nor to the total returns of the growers. However, the advance payments on the 1924 and 1925 prune crops show a much closer relation to the opening price. The California Peach and Fig Growers Association has also advanced a higher price on some grades of fruit in proportion to their value than on others. For instance, in 1923 the same amount was advanced on "B" grade fruit as on "A" grade fruit, because "it was found that early deliveries indicated that some growers in certain sections were unable to deliver fruit above "B" grade, and in other sections certain growers had a large percentage of this grade. Faced with these conditions the management of the Association felt that the growers thus affected might find it difficult to meet their harvesting costs unless the same advance was paid on the delivery of "B" grade fruit as is provided in the contract for "A" grade fruit.[31]

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[28] Anonymous. Final checks paid on first pools. Minute Book, 1 (5): 3. 1923.

——. 1922 pools. Minute Book, 1 (10): 11. 1924.

[29] A clause specifying a minimum advance appeared in the crop contract of the California Prune and Apricot Growers up to 1922, in the Sun-Maid Raisin Growers contract up to 1923, and in the California Peach and Fig Growers contract up to 1924.

[30] The opening price is perhaps the best early indication of the relative value of the various grades, since it is presumably based upon demand and supply conditions.

[31] Reeder, J. L. Peach and fig final settlement. Associated Grower, 5 (8): 13. 1923.

If the advances are made on the basis of a flat rate per unit, those growers who deliver a large proportion of low-grade fruit are benefited at the expense of those who deliver a large proportion of high-grade fruit, because the money to make the advance is obtained either by borrowing at the bank or from returns on fruit already sold, and the amount which can be obtained in either case depends upon the market value of the fruit. The first advance payment is generally made soon after the members have delivered their fruit to the association. For instance, in 1924 the Sun-Maid Raisin Growers of California mailed the first advance payment to each grower within six days after his weight receipts were received,[32] and in 1925 the members of the California Prune and Apricot Growers Association received their first advance payment on prunes within ten days after they made deliveries.[33]

In the dried-fruit associations the first payments are usually made from borrowed money. Later payments, however, are not usually made until the loans have been paid off and additional funds accumulated from the sales of fruit. Even though growers have received 90 to 95 per cent of the value of their crop within a comparatively short time, they are likely to be irritated at any substantial delay in the final settlement. The question of whether the final payments can be made earlier is an important one. If the final payment is not made until all of the fruit is sold, it may be held up for many months because one or two per cent of the crop remains unsold. On the other hand, if the final payment is made before the bulk of the crop has been sold, it may mean that the growers have been paid more than the fruit will bring on the market. For example, "under the old contracts, the Sun-Maid Raisin Growers purchased the carry-over raisins in August a year after delivery time at the supposed market value of that date, and such purchases often led to disastrous results and billbacks."[34]

On the whole it seems desirable that an association adopt a conservative policy in this regard, for over-payments are much more disastrous than slow payments. If the growers in a certain pool have been over-paid, the loss must either be assessed back to that pool or be borne by future pools. The crop contracts of the associations specifically provide that losses shall be assessed back to the growers, but to do so is very difficult. An almost certain way of wrecking an

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[32] Anonymous. Deliveries coming in fast and averaging high. Sun-Maid Business, Oct., 1924, p. 14.

[33] Interview, J. T. Brooks, Sept. 15, 1925, San Jose.

[34] Merritt, Ralph P. 1923 blockade cleared—open road ahead. Sun-Maid Business, April, 1925, p. 3.

association is to resort to 'bill-backs' in order to take care of losses. For this reason very few associations attempt to 'bill-back' the growers, unless it is already bankrupt. The usual procedure is to charge the losses to future pools. Such a procedure is unfair, especially to the new members, but it is used because it results in less trouble than an assessment. In order to prevent the disastrous results of overpayment, it is necessary to hold up the final payment until most of the product has been sold, which may mean that the final payment cannot be made for a considerable period of time.

The policy that is now followed by many of the associations in California is to keep each pool open until most of the fruit in that pool has been sold. The crop contracts of some of the associations provide that the returns from all fruit which has been sold prior to a certain date shall be distributed to the growers, but they do not provide that the unsold portion of the crop shall be inventoried into the following pool.[35] The practice, however, among nearly all of the associations is to inventory the last one or two per cent of the crop into the following pool, and thus close the pool earlier than would otherwise be possible. For example, the Executive Committee of the California Prune and Apricot Growers Association authorized the manager to inventory the 1923 crop prunes that were on hand on April 30, 1925, into the 1924 pool, so that the 1923 prune pool might be closed on that date.[36]

Another question regarding final payments is whether the final payment on each grade of a given variety of fruit should be made as soon as that particular grade is sold. As a rule, some grades are usually disposed of more quickly than others. For instance, the larger-sized prunes and peaches are usually sold early in the season. Among those associations which do not fix an arbitrary differential between the grades as a basis for making the returns, the general practice is to make a final payment on each grade as soon as it is sold. This method has been adopted recently by the California Peach and Fig Growers Association.[37]

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[35] For example, see crop contracts of California Peach and Fig Growers Association and Sun-Maid Raisin Growers of California.

[36] The amount of the 1923 crop of prunes on hand on April 30, 1925, was estimated to be 357,000 pounds. (Rhoades, I. O. Annual report of the president. Sunsweet Standard, 8 (12): 9. 1925.

[37] See 1925 crop contract.

PAYMENTS TO GROWERS BASED UPON AN ARBITRARY PRICE DIFFERENTIAL

Illustrations of an Arbitrary Price Differential.—Instead of returning to the growers the actual amount for which a given grade of fruit sold during the period of the pool, less its pro rata share of the expenses, some associations arbitrarily fix the differential between the different grades, and return the total proceeds from the sale of the fruit on the basis of this differential. In 1924 the Sun-Maid Raisin Growers of California extended the plan of making a differential in the advance payment of the several grades of Muscats,

TABLE 4

ADVANCE, FINAL, AND TOTAL PAYMENTS FOR PRUNES OF SUNSWEET QUALITY, 1925*

Size	First *Cents per pound*	Second *Cents per pound*	Final *Cents per pound*	Total *Cents per pound*
20–31	12.00 flat	2.50 flat	0.4063 flat	14.9063 flat
32–41	5.25 b.b.†	1.25	1.1572	7.8072 b.b.
42–51	3.88	0.75	0.6258	5.3508
52–61	3.88	0.75	0.4495	5.1245
62–71	3.75	0.50	0.4050	4.7050
72–80	3.50	0.50	0.3644	4.4144
81–90	3.38	0.50	0.1362	4.0112
91–100	3.38	0.50	0.1340	4.0090
101–120	1.50 flat	0.25	0.1239	1.8739 flat
121–up	1.50	0.25	0.1803	1.5697

* Anonymous. Payments for prunes. Sunsweet Standard, 10 (2):7. July, 1926.
† Bulk basis.

Thompson Seedless, and dried currants, to include bleached Thompsons and bleached Sultanas, and in this way reduced the number of pools carried on the books of the Association from 27 in 1923 to 8 in 1924.[38] The present plan provides that the full differential be made in the first advance payment of the several grades of each variety, and that thereafter each member receive the same additional payment per pound within each pool.[39]

The method of establishing an arbitrary price differential in the California Prune and Apricot Growers Association is more complicated than that employed by the Sun-Made Raisin Growers of California. In table 4 it will be noted that the first advance payment

[38] Anonymous. Date delivery system adopted at all plants. Associated Grower, 6 (7): 17. 1924.

[39] Interview with J. L. Reed, April 24, 1925, Fresno.

on prunes that are between the sizes 32 and 100, inclusive, is on the bulk basis, which means that each of the ten sizes of prunes within a given-size pool is paid a different amount.[40] In recent years the practice has been to name different basic prices for the different size-pools, because it was found that the basic differential of $1.00 per ton per point does not represent the variation in the market value of the different sizes.[41] Thus at the present time, in the first advance payment there is a differential of $1.00 per ton per point within each size-pool, and in addition there is sometimes a differential between each of the size pools. The subsequent advance payments are at a flat rate per pound within each size-pool. In the first advance payment the grower who delivers prunes that test 45 to the pound receives $1.00 per ton more than a grower who delivers prunes that test 46 to the pound; but in the subsequent payments these two growers receive the same amount per ton. The payments may be different, however, for one size-pool and for another; for instance, in 1925 the second payment on 30/40s was 1.25 cents per pound and on 40/50s it was 0.75 cent per pound. Moreover, the association may vary the amounts of subsequent payments if there are violent changes in the price relationships between the different sizes.

Difficulties Involved in Fixing a Price Differential as a Basis for Pool Payments.—The chief difficulty in fixing a price differential as a basis for pool payments at the beginning of the season is caused by the necessity of forecasting in advance both the relative cost of handling the different grades and the relative prices at which they will sell. If each grower's returns are to represent the average price at which fruit of a quality and size similar to his actually sold during the period of the pool, less its pro rata share of the expenses, the association must be able to make the necessary forecasts with a considerable degree of accuracy.

The problem of forecasting the relative costs of handling each of the various grades is less difficult than that of forecasting the relative prices which will be paid for them, because the relative cost can be determined with a fair degree of accuracy on the basis of past experience. Furthermore, that portion of the total indirect cost which is charged to a given grade can only be determined on some arbitrary

[40] For example, the first advance in 1925 on 40/50s was 3⅞ cents per pound, bulk basis. This indicates that all prunes between 42 and 51 to the pound were paid according to a differential of one-half mill per pound based upon 3⅞-cent price on 80s. Thus, 45s received a first advance of 4.75 cents, 44s received 4.8 cents, and 46s received 4.7 cents.

[41] Anonymous. Opening prices, 1922 prunes. Sunsweet Standard, 6 (4): 12. 1922.

basis anyway. On the other hand, it is almost always impossible for an association, even though it has the best available information regarding demand and supply conditions, to forecast in advance the relative prices which buyers will pay for the different grades. The entire crop of fruit is seldom sold on the price schedule prevailing at the beginning of the season, nor do the prices of the different grades increase or decrease in the same proportion. For example, the California Prune and Apricot Growers Association sold the 1924 crop of prunes at five different prices, and as the season advanced the prices of some of the grades increased or decreased more than others. As a means of reflecting these price changes in the returns to the growers, the association varied the amount of the subsequent payments.

A second disadvantage of the arbitrary differential is that final payments on any given grade of fruit cannot be made until all grades of the fruit are sold. This may frequently work a hardship on those growers whose crop contains a large proportion of the grades that are sold early. However, if a large advance payment on each of the grades in proportion to the anticipated value is made, this unfairness is minimized, although it is not entirely eliminated.

Advantages of Arbitrary Price Differential.—Although there are certain disadvantages in distributing the returns to the growers on the basis of an arbitrary price differential, it is nevertheless desirable to do so under some conditions. In the case of raisins, where the commodity is extensively processed, and the selling grades are different from the receiving grades, it is evident that an arbitrary differential must be established. Recently as many as thirty-nine different packs were quoted at different prices to suit various classes of trade. The demand governs the amount of the crop that will go into each of the different packs, and these selling grades bear no close relation to the receiving classification.[42] "For instance, a pack requiring 3-crown Muscats would not necessarily be taken exclusively from any one of the receiving classifications, so that the 3-crowns might be sorted out from wherever they could be found and sold for the benefit of the members of the pool."[43] Furthermore, the Association maintains a uniform selling standard year after year, as this is necessary in order to maintain the reputation of Sun-Maid goods. On the other hand, the receiving classifications vary from season to season, depending upon the quality of the crops.[44]

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[42] Merritt, Ralph P. Why not estimate return to the grower? Sun-Maid Business, Nov., 1924, p. 3.

[43] Anonymous. Loyal members protected by vigorous action. Sun-Maid Business, Oct., 1924, p. 14.

[44] *Ibid.*

A second advantage of the arbitrary differential is that it enables the Association to adjust the prices between the various grades, so that the returns to the growers will reflect the prices which the buyers are willing to pay for each of the grades. For instance, suppose that an association sells nearly all of the best grades early in the season, and that as the season advances some unforeseen condition brings about a general increase in the price of the fruit, so that as a result of this condition the poorer grades are sold for a higher price than the best grades. If the association returned to the growers the actual amount for which each grade sold, there would be considerable dissatisfaction. Those growers who produced a large amount of the best grades would see no reason why they should receive a lower price than was paid for the poorer grades, just because the association followed a policy which appeared to be the best at that time. On the other hand, the growers who produce a large proportion of the poorer grades would have no reason for complaint, if the association prorated the returns on the basis of an arbitrary differential, because the higher price for which the poorer grades sold was not due to the relative quality or supply of the different grades, since if the high-quality fruit had not been sold until late in the season it would have brought a higher price than that obtained for the low-quality fruit, but solely to the fact that the grades were sold at different times.

CONCLUSIONS

The cooperative fruit-marketing associations in California either handle the products of their members on a pooling basis or sell them on the individual grower's accounts. Pooling is generally the more satisfactory method. The chief advantages of pooling as compared with selling on the individual growers' accounts are: (1) pooling gives the individual grower better insurance against the risks of marketing; (2) pooling facilitates the transfer of the control of the product from the members to the management; (3) certain costs may be reduced by pooling.

(1) If the growers desire to retain control of their fruit, it is generally necessary for them to assume the risk. Since fruit cannot now be handled on organized markets, and since no commercial insurance is available for the major portion of the market risks, pooling offers the best means by which the individual growers may insure themselves against these risks. Pooling distributes the risks of marketing by providing that each member of the pool receive the

same price per unit for similar grades of fruit. The loss or gain from the sale of an individual's product affects him only as it changes the average return of the pool.

If pooling is to be an effective insurance measure, the risks must be spread over a large number of units. The number of units in a pool depends upon the amount of territory in the pool and upon the length of the pooling period. The size of the pooling area is of particular importance in insuring against the risks caused by fluctuations in prices from place to place, and the length of the pooling period is more important in insuring against the risks caused by fluctuations in prices over a period of time. In the marketing of fruits time risks are generally more important than place risks. Consequently, it is usually more important to have long pooling periods than to have large pooling areas, in obtaining a sufficient number of units for effective insurance.

(2) Pooling is generally the most satisfactory method of giving the management of the cooperative marketing association control over the products of its members, and thus enables it to promote orderly marketing by regulating the distribution of the product as to time and place, and to develop new markets. Since the different methods of pooling vary greatly in the extent to which they facilitate the transfer of control from the members to the management, it is essential that a pooling plan be selected which is adapted to the conditions under which the association operates.

The local pool may limit the effectiveness with which the sales agency can distribute the product among the various markets because it is to the interest of the local association to obtain the highest return for its products irrespective of the returns obtained by other locals. If, however, there is an arrangement between the local associations and the sales agency which in practice will give substantial control to the latter, pooling may be on a local basis without a material decrease in the effectiveness with which the crop can be distributed.

When the pooling period is short the tendency is for the members to try to regulate their deliveries of fruit according to the expected fluctuations in the market prices. Carried to its logical extreme this would mean that many growers with inadequate knowledge and acting independently would control the distribution of the product over a period of time instead of leaving the control to a well-informed sales agency. However, if the sales agency is given the authority to determine the total amount of the product to be marketed at any particular time, a short-period pool will give the individual grower a consider-

able degree of freedom without decreasing the effectiveness of the distribution of the product as a whole.

The seasonal pool may also be disadvantageous in this regard. If the grower knows that he will receive the average price for the season irrespective of the time his fruit is sold, he will regulate his deliveries to the association according to his own best interests, which may or may not be to the best interests of the entire group. In order to overcome this disadvantage of the seasonal pool a number of associations handling dried fruit and nuts have established early and late delivery pools.

(3) Pooling tends to reduce certain costs of operation, particularly with regard to the physical handling of the fruit in the packing house and the accounting involved in making payments to the growers. A reasonably long pooling period makes possible a simplification of these operations.

The chief disadvantages of pooling as compared with selling on the individual growers' accounts are (1) the difficulty of equitable adjustment between the members of a pool, and (2) the delay in the returns from the sale of the product.

(1) It is difficult to maintain the proper differential between the members of a pool when variations exist in the time of maturity and in the quality of the product because of (*a*) varying efficiency of the individuals and (*b*) differences in climatic and soil conditions. If the pooling plan is to provide the proper premium on quality, it is essential that, in so far as it is economical, grading should be carried to the point where all of the products in a given grade make the same appeal to the buyers. When the character of the product is such that grading can be performed with sufficient accuracy so that every unit of the commodity in the grade makes the same appeal to the buyers, regardless of its place of production, the general pool can be used advantageously. But when the quality of the commodity is influenced by such factors as soil, climate, cultural skill of the growers, and handling methods in the packing house, and the method of grading is not sufficiently accurate to detect the variations in quality which the buyers recognize, the local pool is fairer to the members.

The length of the pooling period affects the maintenance of the proper differential when the fruit in the pooling area matures at different times during the season. The possibility of obtaining additional returns from marketing fruit at one time rather than at another depends upon the existence of regular changes in the prices of the fruit during the season. If there is a pronounced normal seasonal variation in the prices of a given kind of fruit, it is necessary to have

short pooling periods in order properly to compensate those growers who are able to market their fruit at the times when the price is normally high.

A second problem connected with the equitable adjustment between the members of a pool relates to the prorating of expenses. The general principle to be followed in prorating the expenses of the association among the members is to charge the direct expenses to the particular grade of each kind of fruit for which they were incurred, and to allocate the indirect expenses in a uniform fashion on some basis that seems reasonable and appropriate. The packing-house expenses can generally be prorated more equitably among the growers when each individual packing plant is owned and operated by only those growers who deliver their fruit to it. The administrative and sales expenses are mostly indirect expenses, and they can usually be prorated as equitably with a federation of local pooling areas as with a general pool.

The bases used in prorating the indirect expenses by the cooperative fruit-marketing associations in California are (1) a flat rate per physical unit, (2) a certain percentage of the sales value, or (3) a combination of the two. Since any grade of a given kind of fruit is usually equally responsible for the overhead costs of a packing plant with any other grade, the practice is to prorate the costs on the basis of a flat rate per physical unit. This same method is followed by some associations in allocating the costs of selling and administration. Other associations allocate these costs on the basis of sales value. The chief disadvantage of allocating indirect expenses on the basis of sales value is that it narrows the price differential between the different grades to the growers, and to that extent discourages the production of high-quality fruit.

(2) When fruit is pooled payment cannot safely be made in full until the returns have been received from the sales of the bulk of the fruit within the pool. When the length of the pooling period is short, however, this disadvantage is minimized. But when the pooling period is long the resulting delay in making the final payment is apt to be a source of irritation to the growers. For this reason many of the fruit associations have adopted the short-period pools. The disadvantage of a seasonal pool in this respect may be lessened to a considerable extent by making substantial advance payments soon after the fruit is delivered.

This study clearly indicates that there is no one pooling plan that is best for all of the cooperative fruit-marketing associations. In order to obtain the most satisfactory results the pooling plan must be

adapted to the commodity which the association handles and to the conditions under which it operates. Among the more important factors which should be given consideration in selecting a pooling plan are the following:

1. Accuracy with which the fruit can be graded.

2. Variations in the quality of the fruit because of (*a*) differences in the efficiency of the growers or (*b*) differences in the location of the orchards.

3. Existence of normal seasonal variation in the prices of the fruit.

4. Variations in the time of harvesting fruit because of (*a*) differences in the efficiency of the growers or (*b*) differences in the location of the orchards.

5. Distance which the fruit can be hauled to the packing plant without incurring excessive costs or causing damage to fruit.

6. Economies of a large-scale plant for handling a particular kind of fruit.

7. Importance of market risks.

8. Amount of control needed by the management to promote orderly marketing.

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