POOLING

and Other Grower Payment Methods

AS USED BY

Local Fruit, Vegetable, and Tree Nut

COOPERATIVES

by Clyde B. Markeson

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The Farmer Cooperative Service conducts research studies and service activities of assistance to farmers in connection with cooperatives engaged in marketing farm products, purchasing farm supplies, and supplying business services. The work of the Service relates to problems of management, organization, policies, merchandising, product quality, costs, efficiency, financing, and membership.

The Service publishes the results of such studies, confers and advises with officials of farmer cooperatives; and works with educational agencies, cooperatives, and others in the dissemination of information relating to cooperative principles and practices.

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Contents

Highlights and Conclusions

Fruit, vegetable, and tree nut cooperatives, to operate successfully in a market changing toward large-scale purchasing and mass distribution at the retail level, should:

1. Have a fully integrated marketing program. This enables a cooperative to improve services to growers and to appeal to large-scale buyers purchasing for both the fresh and processed markets.

2. Rely heavily upon cooperative marketing contracts for obtaining a large, stable volume of produce meeting specified marketing standards.

3. Handle a large volume of business in order to efficiently use modern, lower-cost, up-to-date technology.

The primary purpose of this study was to determine the relationship between these criteria and the methods used by cooperatives in handling and paying for growers' produce. Some of the important findings follow.

- Of the 455 cooperatives, 352 used a pooling method and 103 used a non-pooling or individual-lot method for paying growers. These represented 77 and 23 percent, respectively, of the total number.

- Associations handling one commodity and limiting their services to selling generally treated products as individual lots. Those handling more than one commodity and performing packaging or processing services, or both, most commonly pooled products and sales.

- Eight of 10 fruit, vegetable, and tree nut cooperatives participating in the study used producer-member contracts. However, a definite variation existed in the extent to which they were used. More than 90 percent of the pooling associations had marketing contracts with growers while 50 percent of those selling on an individual-lot basis did not.

- Of all the fruit, vegetable, and tree nut business, 63 percent, was concentrated in the hands of 117 cooperatives paying growers $1 million or more a year. Of these 117 associations, 94 percent pooled products and receipts while 6 percent handled products as individual lots.

● Pooling arrangements of fruit, vegetable, and tree nut cooperatives differed in complexity and the length of time over which the pool extended. Many associations handled more than one commodity, each being pooled separately. These pools were generally divided by variety and further subdivided by grade and size. On the average seasonal pools were most common for all commodity groups. Important exceptions were berries, tree nuts, and mixed vegetables. Berries were usually pooled on a daily basis and tree nuts on a part-season basis, while a weekly pool was favored for mixed vegetables.

● Handling small lots, pooling for nonmembers or operating under a diversion program did not materially alter pool payment practices.

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It is reasonable to conclude from the study that grower-owned pooling associations were best able to capitalize on the changing market structure. In contrast to those treating products as individual lots, pooling cooperatives handled a larger number of commodities, were more successful in extending their marketing season and in making produce available in a greater variety of forms, and relied more heavily upon a producer-member contract to integrate the production practices of growers with their association's marketing program.

Pooling and Other Grower Payment Methods

As Used by Local Fruit, Vegetable, and Tree Nut Cooperatives

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Methods used in making payments to growers for crops marketed through a cooperative have an important influence upon growers' net returns. The payment method should not only treat growers equitably; it should also help the cooperative compete effectively in marketing members' produce. If payment methods accurately reflect both the value of growers' crops and market requirements, the cooperative can operate in an efficient and orderly manner and increase returns to growers.

Far-reaching changes taking place in the marketing of food require that cooperatives continually evaluate their payment methods and other operating practices in light of new conditions. Perhaps the most striking change in the past decade has been the shift toward organized buying and mass distribution at the retail level. According to census data the number of retail stores declined from 510,000 in 1939 to 385,000 in 1954, while the average annual volume per store increased from $18,000 to $103,000. The Seventh Biennial Grocery Survey shows that 32 percent of the stores did 90 percent of the grocery sales in 1956. This development toward larger but fewer buyers is affecting wholesalers and other handlers of agricultural commodities, including marketing cooperatives.

With cooperatives marketing fruits, vegetables, and tree nuts, the impact of this change is primarily two-fold. First, a mass merchandising program requires a large continuing volume of products with a uni-

Acknowledgment: The author wishes to express his appreciation to the managers and other personnel of the 455 cooperatives who provided information for the study. He is deeply indebted to Wendell M. McMillan, Fruit and Vegetable Branch, Farmer Cooperative Service, for providing suggestions and direction in the preparation of the report.

form specified quality. The organized retailer thus expects certain physical services to be performed by the cooperative, or to have the product in such a condition that he can perform the services himself. Such services include grading, canning, freezing, prepackaging, and delivery. Storage at the point of production may also be included for processed or nonperishable products.

Secondly, the large-scale buyer purchasing for mass distribution expects certain nonphysical marketing services to be performed by the cooperative. These include the guaranteeing of volume and a willingness to back up quality standards. Marketing cooperatives are finding it essential to provide both the physical and nonphysical services demanded by these buyers and distributors if they are to compete successfully within the present-day market structure.

In view of these changing market requirements, existing associations and growers interested in forming marketing cooperatives should adapt the payment methods and other operating practices which encourage growing of products demanded by the market, extend the cooperative's marketing opportunities, and provide maximum returns to patrons.

Purpose and Scope of Study

The overall purpose of this study was to provide data on the types of grower payment methods used by local fruit, vegetable, and tree nut cooperatives; the extent of their use; and the factors associated with these methods that contribute to an effective and orderly marketing program. While the report is based on 1954-55 information, the findings are applicable to pooling operations in 1959.

In the period for which data were obtained, 696 local cooperatives were marketing fruits, vegetables, and tree nuts (3)[1]. Questionnaires were mailed to each. Of this number, 513 questionnaires were returned. Thirty-six were unclaimed, as some cooperatives had either discontinued operations by 1955 or were temporarily inactive because of crop failure. Another 14 provided little data on their operations. An additional eight did not qualify as marketing cooperatives. After making the above deductions, 455 associations served as the basis for the study.

Data are presented in terms of averages and do not describe the features of any one cooperative. Rather they provide general information on grower payment methods and other operating practices for the industry as a whole.

Such information can be useful to directors and managers of cooperatives by pointing out the role of grower payment procedures in relation to other operating practices of the association.

It can also be used as a basis for making recommendations on the payment method best adapted to the commodity an association handles and to the competitive conditions

[1] Underlined figures in parentheses refer to literature cited, page 30.

A California co-op receiving cantaloupes like these from many growers may pool them, sell them as individual lots, or use a combination of the two.

under which it operates. And the data should be useful to marketing firms, other than cooperatives, since some of their grower payment methods are similar to those used by cooperatives. For example, where "grower participation plans" are in effect, growers generally receive an initial payment for produce delivered to the plant and final settlement after the product is marketed, or before the beginning of the next season. In this respect, they resemble a pool method of payment.

Methods of Paying Growers

The 455 cooperatives used the following payment methods: (1) They purchased members' produce outright at a price, specified prior to, or at time of, delivery; (2) they sold the product of each grower on an individual account basis; (3) they acted as an intermediate party when produce was sold directly from grower to buyer; and, (4) they pooled the products and returns of growers. Some used a combination of methods.

Outright Purchase

Outright purchase involves a two-way price negotiation; one taking place between the cooperative and the grower, before or at the time produce is delivered to the association, and another between the cooperative and the buyer. The price paid the grower is based upon the local market price, while the price received by the cooperative is based upon the terminal price. Any annual net margins above operating costs, resulting from differences between the association's purchase and selling prices, are allocated on a patronage basis at the close of the cooperative's fiscal year.

Outright purchase is one way a cooperative can meet competition from cash buyers. The method appeals to many farmers since they know they can receive an immediate return for their produce. However, the association must be prepared to assume risks and financing arising from any adverse price changes between the time produce is purchased and resold.

Selling on Individual Grower's Account

Cooperatives selling on individual account maintain the identity of a grower's product from time of acquisition until it is sold. The association acts as an agent for the grower, negotiates the sale, collects the money, deducts the costs incurred in making the sale, and returns the net balance to the producer together with an itemized account of the transaction.

Selling produce on an individual account basis permits a grower to sell on the day of his choosing. This makes it difficult for a cooperative to market in an orderly manner. Each buyer's need must be matched by a grower's wish to sell. Likewise, before a grower can sell, a buyer must be found. In contrast to outright purchase, this method reduces the need for working capital; the producer--rather than the cooperative--assumes all the risks of a fluctuating market, and produce cannot be stored in the cooperative's name.

Direct Sale from Grower to Buyer

This method is a modified arrangement of selling for a grower's account. General terms of the sale are arranged, or are subject to final approval, by the cooperative; but specific terms are made between the grower and the buyer. For example, the cooperative may negotiate the price but the delivery schedule is arranged by the grower.

Advantages and disadvantages of this method are similar to those of selling for a grower's account.

Pooling

The term "pooling" refers to a method by which a cooperative can handle and pay for members' produce. It can involve the commingling of the products from many producers, the combining of sales returns and operating expenses, and the prorating of net returns among members in proportion to the volume of business each transacts through the cooperative over a certain period of time.

While the terms "pooling" and "pools" are sometimes applied to any form of cooperative marketing (1), a cooperative was classified as a pooling association in this study

if, in its sale of produce and in its allocation of receipts, it treated all produce as one lot rather than several lots sold on the basis of individual ownership. Physical mingling of the products may or may not have been involved and individual grower identity was usually lost except as the grower participated in the lot accounting.

Pooling is a means of spreading market risks. While no one grower gets the highest price during the term of the pool, each grower is assured that he will not be hurt by receiving the lowest price. Pooling enables the management of a cooperative to plan an effective marketing program by controlling the time, place, and form in which produce is sold. Pooling may also make it easier for a cooperative to obtain needed finances.

When pools are long in duration, final payment to members may be delayed, since pool computations cannot be made until the end of the pool period. This works a hardship on patrons needing funds to cover loans and other expenses. To overcome this shortcoming, some cooperatives have adapted, or shifted to, a shorter pooling period while others have advanced harvesting costs or cash according to growers' needs.

Another problem sometimes encountered is that the product of one grower may be at the top of a grade and that of another grower at the

The Florida orange story begins in a typical grove where experienced workers pick between 40 and 65 two and one-quarter bushel boxes a day. In many cases, a co-op harvests members' fruits and delivers it to the co-op packing plant.

bottom. Both may be sold in the same pool. This tends to discourage high-quality production. It is important, therefore, to have strict grading and other requirements to hold high-quality producers.

Use of Various Methods

The payment method used by a marketing cooperative is an important factor in developing the kind of orderly marketing program needed to compete effectively in the market. To promote orderly marketing, the management of an association, rather than the individual member, must have control over the product. Pooling, as compared to nonpooling, is generally the more satisfactory method of making this transfer possible (2).

Of the 455 cooperatives surveyed, 352 used a pooling arrangement and 103 used a nonpooling, or individual-lot type method in handling and paying for growers' produce. These represented 77.4 and 22.6 percent, respectively, of the total number (table 1).

Of the nonpooling associations, 67.0 percent sold for an individual grower's account, 18.4 percent purchased produce outright, 9.7 percent arranged for or supervised a direct sale between the grower and buyer, and 4.9 percent used a combination of these methods.

From the viewpoint of the fruit, vegetable, and tree nut industry, orderly marketing is desirable. This is probably the reason that an average of more than three out of four cooperatives used the pooling method for paying growers.

This is not to say that all cooperatives should pool. Some pooling associations, for example, have found it desirable to purchase produce outright or to sell for an individual grower's account in order to satisfy the needs of some growers, to fulfill sales commitments, and to stabilize the market price. Of these nonpooling methods, outright purchase more readily lends itself to the development of an orderly marketing program as produce can be handled in the association's name.

Characteristics of Pooling and Nonpooling Co-ops

Differences existed in the characteristics and operating functions of pooling and nonpooling cooperatives. These included differences in commodities marketed, number of commodities handled, location, marketing services provided, the use of cooperative marketing contracts, volume of business, and operating procedures.

Such data provided indications of how pooling and nonpooling payment methods and other operating practices were related to marketing needs of the grower, operation of the association, and the final form in which the product was marketed. On the basis of these findings, conclusions were drawn as to which associations were more likely to provide the quantity and quality of produce needed by the large-scale purchasers and distributors characteristic of today's market.

Commodities Marketed

Farmer cooperatives have been organized in most major producing

Table 1.--Number of fruit, vegetable, and tree nut cooperatives using specified grower payment methods, 1954-55

Commodity group marketed[1]	All cooperatives	Cooperatives using specified payment methods					
		Pooling	Nonpooling				
			Total	Grower account	Outright purchase	Direct sale	Combination
	Number			*Number*			
Fruit							
Citrus	165	163	2	2	[2] -	-	-
Deciduous							
Apples	24	16	8	6	1	-	1
Berries	32	14	18	12	4	2	-
Grapes	27	23	4	3	-	-	1
Soft deciduous	22	12	10	7	-	2	1
Apples and soft deciduous	30	21	9	8	1	-	-
Mixed deciduous	14	11	3	2	1	-	-
Total deciduous	149	97	52	38	7	4	3
Minor fruit	14	11	3	2	-	1	-
Total fruit	328	271	57	42	7	5	3
Vegetables							
Potatoes	24	14	10	2	3	4	1
Mixed vegetables	57	31	26	18	7	1	-
Total vegetables	81	45	36	20	10	5	1
Fruits and vegetables	24	17	7	5	1	-	1
Tree nuts	18	16	2	2	-	-	-
Other	4	3	1	-	1	-	-
Grand total	455	352	103	69	19	10	5
Percent of total associations	100.0	77.4	22.6	15.2	4.2	2.2	1.0
Percent of total nonpooling associations	-	-	100.0	67.0	18.4	9.7	4.9

[1] Crops included in each group are listed on page 8.

[2] In this and succeeding tables, a dash means that cooperatives were not represented, in contrast to a zero which means that cooperatives were represented but did not engage in the activity specified.

areas of the country to market nearly all of the different kinds of fruits, vegetables, and tree nuts grown for commercial use. For purposes of analysis, the 79 different crops marketed by the participating cooperatives were classified into groups. Each classification is based upon the major product handled, and does not take into consideration the final form in which the commodity was marketed. There is no overlapping

among the classifications. Following is an enumeration of the crops included within each grouping:

1. *Citrus* includes grapefruit, lemons, oranges, tangerines, or any combination of these.

2. *Apples*

3. *Berries* include blueberries, boysenberries, currants, gooseberries, raspberries, strawberries, or any combination of these.

4. *Grapes*[2]

5. *Soft deciduous fruit* includes apricots, cherries, nectarines, peaches, pears, plums, prunes, or any combination of these.

6. *Apples and soft deciduous fruit* include various combinations of groups 2 and 5.

7. *Mixed deciduous fruit* includes combinations of groups 3, 4, and 6.

8. *Minor fruit* includes avocados, cantaloupes, citron, cranberries, figs, limes, olives, persimmons, pomegranates, watermelons, or any combination of these.

9. *Potatoes*[3]

10. *Mixed vegetables* include all vegetables other than potatoes.

11. *Fruits and vegetables* include combinations of groups 7 and 10.

12. *Tree nuts* include almonds, filberts, and walnuts.

13. *Other* includes one of three combinations: Groups 1 and 10; 8 and 10; or 10 and 12.

The grower payment methods used by the cooperatives varied with the commodities marketed by the individual associations. Over three-fourths of all associations used the pooling method, when classified by major commodity groups marketed. Proportions varied, however, with pooling being used by 89 percent of tree nut cooperatives, 83 percent of the fruit cooperatives, but only 56 percent of the vegetable cooperatives (table 2).

Considering the associations that marketed only fruits, the percent of each commodity group that pooled was as follows: Citrus--99; grapes--85; minor fruits--79; mixed deciduous--79; apples and soft deciduous--70; and apples--67. The only commodity groups in which less than two-thirds of the cooperatives operated on a pool basis were berries (44 percent) and soft deciduous fruit (55 percent).

Number of Commodities Handled

Some cooperatives are established on a one-commodity basis. Yet the needs of growers, the presence of an organized marketing facility, and similarity in handling practices encourage the handling of other commodities, thereby expanding the cooperative product line to multi-commodity proportions.

Of the participating cooperatives, slightly more than half, or 55 percent, were established on a one-commodity basis. Another 23 percent

[2] Includes one cooperative handling raisins.

[3] Includes four potato associations handling minor amounts of onions, cabbage, cauliflower, or squash.

Table 2.--Pooling cooperatives as a percent of all fruit, vegetable, and tree nut cooperatives, 1954-55

Commodity group	Pooling cooperatives as a percentage of all cooperatives
	Percent
Fruit	
Citrus	98.8
Deciduous	
Apples	66.7
Berries	43.8
Grapes	85.2
Soft deciduous	54.5
Apples and soft deciduous	70.0
Mixed deciduous	78.6
Total deciduous	65.1
Minor fruit	78.6
Total fruit	82.6
Vegetables	
Potatoes	58.3
Mixed vegetables	54.4
Total vegetables	55.6
Fruits and vegetables	70.8
Tree nuts	88.9
Other	75.0
Grand total	77.4

handled two commodities, and the remaining 22 percent handled more than two (table 3). Included among this latter group were 10 associations handling from 10 to 23 different commodities.

Although little overall difference existed in the number of commodities handled by pooling as compared to nonpooling cooperatives, handling one commodity was relatively more important within the nonpooling group (60 percent compared to 54 percent), while a comparatively greater proportion of the pooling associations handled two or more (46 percent compared to 40 percent).

Table 3.--Fruit, vegetable, and tree nut cooperatives classified by number of commodities handled, 1954-55

Number of commodities handled	Pooling cooperatives		Nonpooling cooperatives		All cooperatives	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*
1	187	53.6	59	60.2	246	55.0
2	84	24.1	17	17.3	101	22.6
More than 2	78	22.3	22	22.5	100	22.4
Total[1]	349	100.0	98	100.0	447	100.0

[1] Three pooling and five nonpooling associations did not enumerate the number of commodities handled.

For the number of commodities handled for individual commodity groups see appendix table 1.

The relationship between number of commodities handled and grower payment methods can be expressed in the following manner:

Number of commodities handled	All cooperatives	Percentage of all cooperatives		
		Pooling	Nonpooling	Total
	Number		*Percent*	
1	246	76.0	24.0	100
2	101	83.2	16.8	100
More than 2	100	78.0	22.0	100
Total or average[1]	447	78.1	21.9	100

[1] Three pooling and five nonpooling associations did not enumerate the number of commodities handled.

As the number of commodities handled increased from one to two, pooling cooperatives--as a percent of all cooperatives--increased from 76 to 83 percent. Conversely, the proportion using individual-lot settlements declined from 24 to 17 percent.

The relative magnitude of the percentage figures in each row is, of course, determined by the number of cooperatives which did or did not pool. In all cases, cooperatives using pools were more numerous than those not pooling, regardless of the number of commodities handled. This must be taken into account in evaluating the relationship.

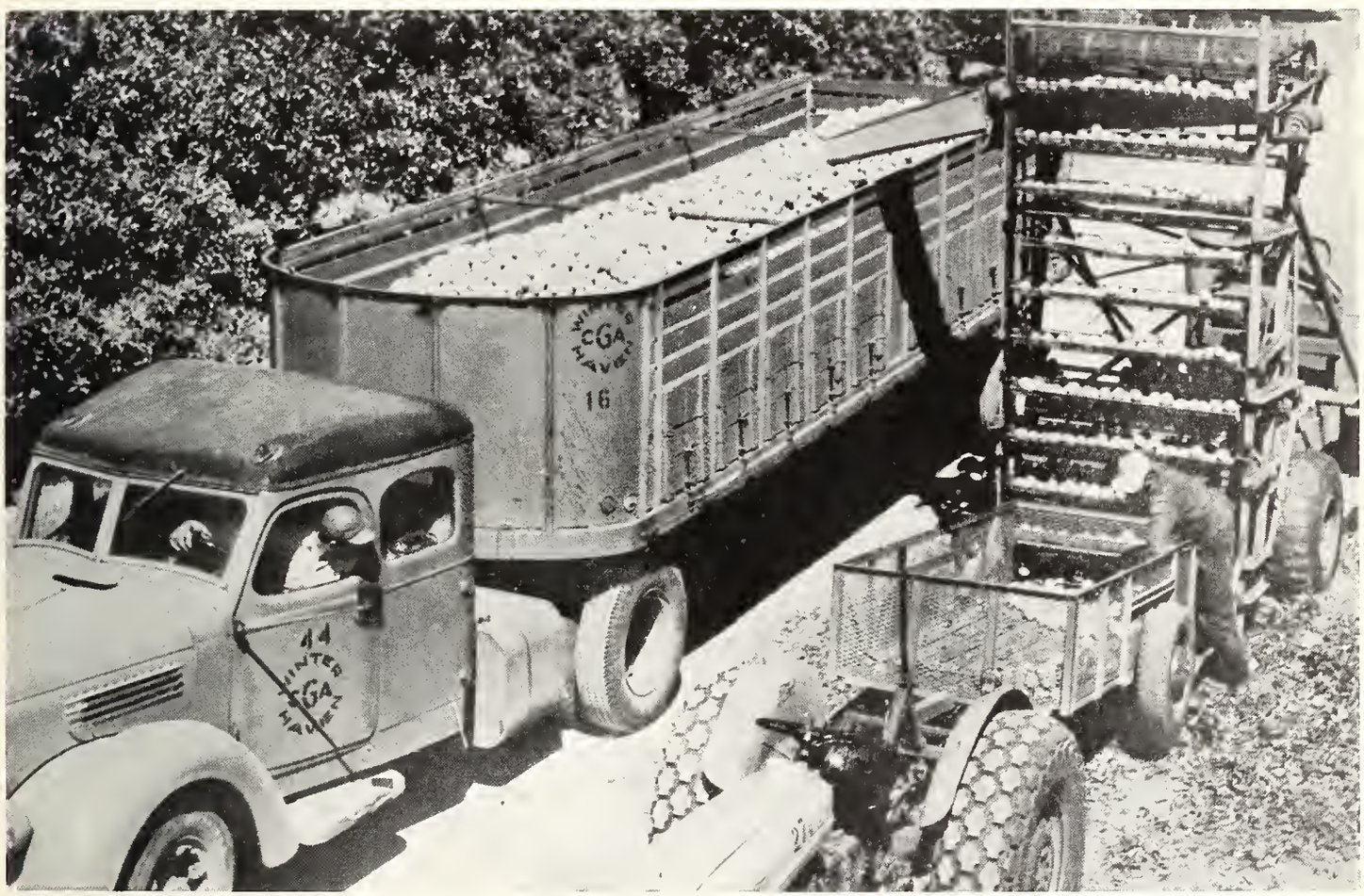
For example, pooling associations represented, in total, 78 percent and nonpooling associations 22 percent of all the cooperatives providing information on this subject. If no differences existed in the number handled between the pooling and nonpooling groups, 78 percent of all associations handling one, two, or more than two commodities would have used pools, and the remaining 22 percent would have used indi-

vidual-lot settlements. This, however, was not the case. More than 22 percent of the total number of associations handling one commodity operated on a nonpool basis and less than 78 percent used pools. On the other hand, more than 78 percent of all cooperatives handling two commodities used the pooling method and less than 22 percent did not.

Comparable analysis in the following pages of the report must be interpreted in the same manner.

In summary, the preceding data show that cooperatives paying for growers' produce on a pool basis were generally more diversified, in number of commodities represented, than those using an individual-lot settlement.

Handling more than one commodity has several advantages. First, economies of operation result when handling practices for several commodities are similar. Second, by providing more than one commodity outlet, an association can provide marketing services for those growers producing several commodities. Third, it provides a means of spreading market risks. Losses in marketing one product may be offset by earnings in another. And, fourth, a marketing



Bulk handling is one means of speeding the harvesting operation.

cooperative can more fully satisfy the purchasing requirements of larger-scale buyers.

On the other hand, a multicommodity cooperative may have problems in obtaining the greater management skills and larger capital resources needed for a more complex operation.

Location

These cooperatives were scattered widely throughout the United States--from California to Florida and from Washington to Maine (figure 1). They were, however, concentrated in the States of heaviest production with 230, or 51 percent, in California and 29, or 6 percent, in Florida.

Fruit Marketing

More cooperatives marketed fruit in the West than in any other region. Fruit growing is a highly specialized industry in this area. The industry is primarily confined to valleys and foothills or is more or less geographically localized in other respects.

High land values, intensive and expensive cultural practices, distance from market, and other related problems too complex for an average grower to cope with independently have been important factors influencing the formation of fruit cooperatives in this region. In the crop year 1954-55, 76 percent of all fruit associations participating in the study were located here with the largest proportion handling either citrus or grapes (appendix table 2).

Fruit production is not as specialized or localized in the midwestern and eastern regions. Furthermore, problems of production, transportation, and marketing are, in general, of a different nature than those confronting the western fruit grower. Irrigation is not as essential, major consuming centers are comparatively nearer, and face-to-face contacts with buyers are more frequent. Consequently, with the exception of Florida, cooperative development has progressed more slowly in the Midwest and the East. In the crop year 1954-55, each of these regions had 12 percent of the fruit cooperatives, with berry associations most prevalent in the Midwest while apple associations dominated in the East.

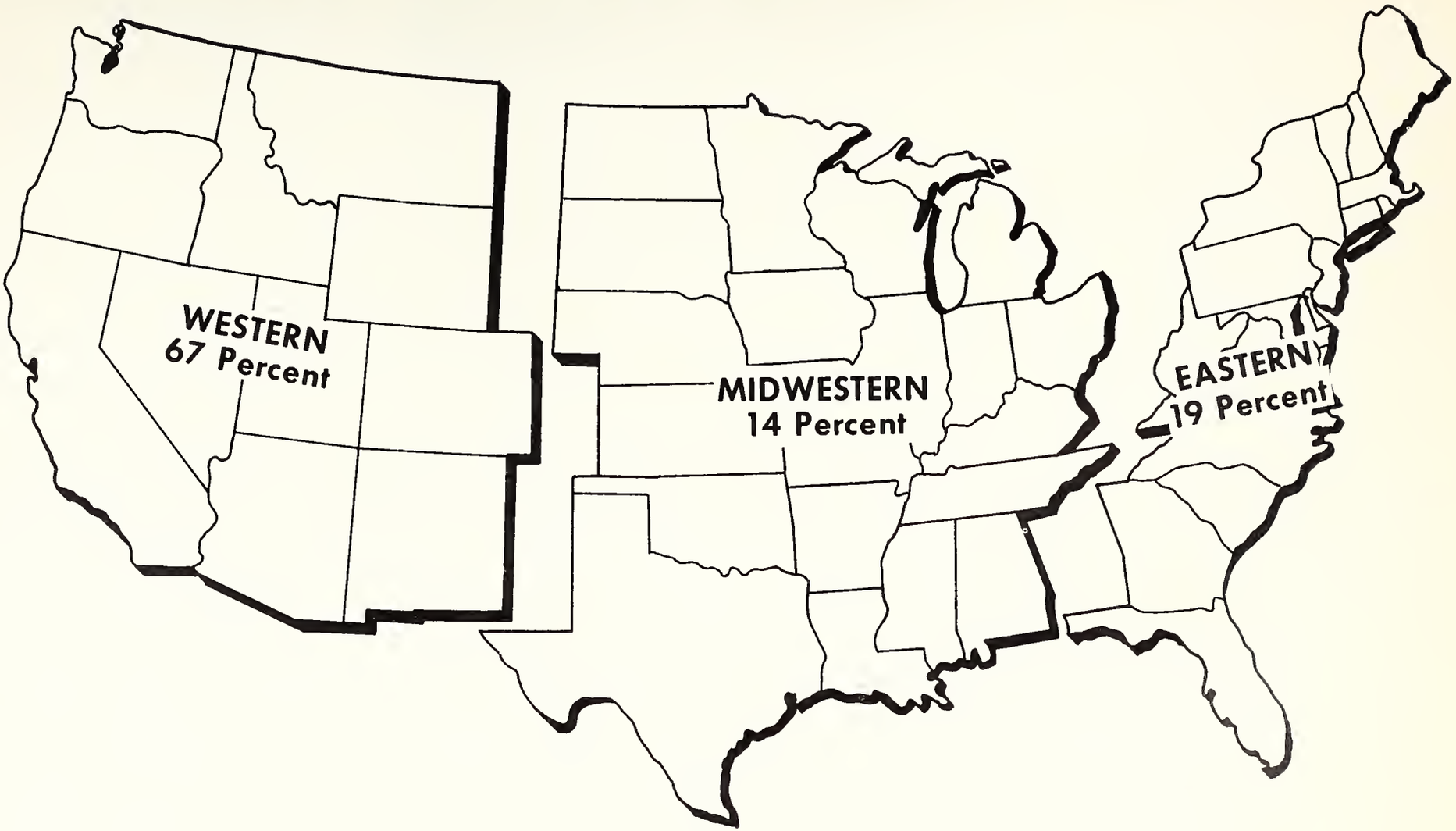
Vegetable Marketing

Cooperative activity in the vegetable industry has not developed to the same extent as in the fruit industry. One important reason is the difficulty producers have in obtaining credit as production financing has generally been considered more hazardous in the vegetable field. Prices often fluctuate widely from season to season and even from day to day. High incomes one year may be followed by losses the next since vegetable farms, unlike most fruit farms, have greater flexibility in shifting from one type of production to another.

Cooperative auction markets were prevalent in the selling of mixed fresh vegetables. Most were located in the eastern region along the Atlantic Seaboard from Florida to Massachusetts. They were very popular among producers not large enough to sell direct and not specialized enough to organize cooperative shipping associations. Tomatoes and string beans were important vegetables sold at auction but

Figure 1

Proportion of 455 Fruit, Vegetable, and Tree Nut Cooperatives by Regions, 1954-55



other commodities including asparagus, cucumbers, peppers, and celery were also marketed in large volume by some cooperatives.

A major portion of the potato cooperatives were independent locals marketing for fresh consumption. They were represented in every region but were most pronounced in the East.

Fruits and Vegetables

Cooperatives marketing a combination of *mixed deciduous fruit* and *mixed vegetables* were principally confined to the western and eastern regions. Over half of those in the West were confined to Oregon while 40 percent of the eastern associations were located in New Jersey.

Tree Nuts

The cooperative marketing of tree nuts was confined to the Pacific Coast States with 72 percent located in California, 22 percent in Oregon, and the remainder in Washington.

Other

Cooperatives handling *other* commodities were located in Texas, Iowa, Oregon, and California. Thus, the western and midwestern regions each had one-half of these associations.

To ascertain the extent to which product specialization and distance from market influenced the type of grower payment method used, the data were classified and summarized as shown in table 4. For comparative purposes, cooperatives in the West comprise the group that sold most of their products in markets more distantly removed from the producing area. The other two groups consist of those organizations located near the markets in which most of their products were sold.

Two relationships were apparent. First, the cooperatives were concentrated in the West and, second, a major portion of this group used pools while nonpooling was relatively more important for the nearby groups.

The relationship between grower payment methods and changes in proximity to market was as follows:

Region	All cooperatives	Percentage of all cooperatives		
		Pooling	Nonpooling	Total
	Number		*Percent*	
West	305	89.5	10.5	100
Midwest	63	49.2	50.8	100
East	87	55.2	44.8	100
Total or average	455	77.4	22.6	100

As proximity to major consuming centers increased, the use of pools became less important. Nine out of ten western cooperatives pooled products and receipts while about one out of two in the Midwest and the East used an individual-lot settlement.

In summary, data by location show the predominant position of the West over other sections of the United States. Most of the fruit cooperatives, excluding those marketing *berries*, nearly half those marketing *fruits and vegetables*, all those marketing *tree nuts*, and one-half of those marketing *other* commodities were concentrated in this region. Those marketing *berries* were primarily confined to the Midwest, while the ones marketing *vegetables* were highly localized in the East.

Table 4.--Grower payment methods of fruit, vegetable, and tree nut cooperatives by regions, 1954-55

Region	Pooling cooperatives		Nonpooling cooperatives		All cooperatives	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*
West	273	77.6	32	31.1	305	67.0
Midwest	31	8.8	32	31.1	63	13.9
East	48	13.6	39	37.8	87	19.1
Total	352	100.0	103	100.0	455	100.0

Geographic product specialization and distance from market were also related to grower payment methods. Cooperatives in the West, where fruit and tree nut production is specialized and products are principally sold in distant markets, relied heavily upon the pooling method. On the other hand, the use of pools was less pronounced for the vegetable cooperatives located in mixed farming areas nearer the markets. Thus, transfer of commodity control from the grower to the management of an association appeared one way that cooperatives which were farther away from their markets dealt with problems of transportation and distribution not experienced by the nearby associations.

Marketing Services Rendered

In addition to emphasizing product diversification, associations are finding it necessary to perform more than a single function if they are to satisfy the requirements of large-scale buyers and to increase returns to growers. The purpose of this section is to examine the services performed by cooperatives surveyed and to develop some conclusions as to which were more effective in lengthening their line of products and in extending their marketing opportunities.

These potatoes, grown by members of Maine Potato Growers, Inc., Presque Isle, reach their final destination in the consumer's market basket under the Blue Goose label.

Teletype is one method used by cooperatives to communicate with terminal markets.

In developing the grower marketing services characteristic of these cooperatives, the services were classified into four categories. These were: (1) Selling; (2) grading, or grading and selling; (3) packaging, or packaging plus any combination of (1) and (2); and (4) processing, or processing plus any combination of (1), (2), and (3). Grading includes inspection; packaging includes consumer size or bulk packaging, or both; and processing includes canning, freezing, and drying or any combination of these.

Of the 455 associations, 59 percent provided packaging or some combination of packaging-grading-selling services for their members. Thirteen percent limited their services to selling, 10 percent either graded or graded and sold, and 19 percent engaged in processing (table 5). But, as services became more complete a definite change occurred in the pattern of payment procedures. When services were limited to selling, grading, or grading-selling, cooperatives most commonly handled products on a nonpool basis. As services were extended to include packaging or processing, products were more frequently pooled.

The overall relationship between grower payment methods and marketing services was as follows:

Marketing service[1]	All cooperatives	Percentage of all cooperatives		
		Pooling	Nonpooling	Total
	Number		*Percent*	
I	57	38.6	61.4	100
II	44	59.1	40.9	100
III	269	87.4	12.6	100
IV	85	81.2	18.8	100
Total or average	455	77.4	22.6	100

[1] I--sell only; II--grade or grade-sell; III--pack, or pack plus any combination of I and II; IV--process, or process plus any combination of I, II, and III.

As services to members increased from selling alone to an operation involving processing, pooling cooperatives--as a percent of all cooperatives--increased from 39 to 81 percent. At the same time, the proportion not using pools declined from 61 to 19 percent of the total number.

By Commodity Groups

The largest proportion of all citrus cooperatives performed packaging or some combination of packaging-grading-selling for their members (appendix table 3). But, when the

associations processed, thus making citrus available in a greater variety of forms, they used a pool method of payment.

A large number of citrus cooperatives also provided grove care for their growers. This included fertilizing, irrigating, spraying, harvesting, and delivering produce to the association. A highly integrated set of services was therefore available to producers marketing through their grower-owned citrus organizations.

Packaging or some combination of packaging-grading-selling were the marketing services most frequently performed by all deciduous fruit cooperatives. Where those services were most prevalent, the associations pooled products and receipts. When services were limited to selling, the cooperatives usually handled produce as individual lots.

Processing was performed by 28 percent of the pooling cooperatives as compared to 14 percent of the nonpooling deciduous fruit associations. This service was most common among pooling cooperatives crushing grapes for wine or brandy and among nonpooling associations handling mixed deciduous fruit.

As vegetables are primarily sold in fresh rather than processed form, the marketing services rendered by all vegetable cooperatives included in the study were similar. Most packed, or provided some combination of packing-grading-selling services, for their growers.

Grower-owned organizations processing *fruits and vegetables* relied upon pooling but, when products were sold fresh, they most commonly sold on an individual-lot basis.

Table 5.--Fruit, vegetable, and tree nut cooperatives classified, by marketing services performed, 1954-55

Marketing service[1]	Pooling cooperatives		Nonpooling cooperatives		All cooperatives	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*
I	22	6.2	35	34.0	57	12.5
II	26	7.4	18	17.5	44	9.7
III	235	66.8	34	33.0	269	59.1
IV	69	19.6	16	15.5	85	18.7
Total	352	100.0	103	100.0	455	100.0

[1] I - sell only; II - grade or grade-sell; III - pack, or pack plus any combination of I and II; IV - process, or process plus any combination of I, II, and III.

Tree nuts are primarily sold in-shell, shelled in cans or bulk, or diverted to oil, meal, and byproduct uses. Thus little differences existed in the services provided by tree nut cooperatives. All rendered in large part a grading or grading-selling service or processed, depending upon the form in which the product was sold.

By Location

In formulating the marketing services characteristic of the 455 associations, it appeared that providing some services depended upon location as well as the commodity group handled. To examine the relationship between distance and location, the cooperatives were analyzed by geographic regions. As before, the distant group consisted of those located in the West while the nearby group comprised those associations located in the Midwest and the East. This relationship is shown below.

Marketing service [1]	All cooperatives	Percentage of all cooperatives by regions			
		West	Midwest	East	Total
	Number		*Percent*		
I	57	19.3	38.6	42.1	100
II	44	38.6	31.8	29.6	100
III	269	84.7	5.6	9.7	100
IV	85	57.7	14.1	28.2	100
Total or average	455	67.0	13.9	19.1	100

[1] I--sell only; II--grade or grade-sell; III--pack, or pack plus any combination of I and II; IV--process, or process plus any combination of I, II, and III.

According to the analysis, distance from market was an important factor affecting the type of service rendered. Those associations performing packaging or processing services, or both, were concentrated in the West while those rendering selling, grading or grading-selling services were largely confined to the Midwest and the East. And, as services increased from selling alone to an operation involving processing, western cooperatives--as a percent of all cooperatives--increased in importance. In contrast, midwestern and eastern associations tended to constitute a smaller proportion of the total number.

In summary, data by service rendered showed that when a cooperative's services were limited to selling, it generally handled produce on a nonpool basis. When more than a selling service was provided, it usually pooled. By engaging more frequently in packaging, processing, or both, cooperatives using a pool method of payment were more successful in lengthening their line of products, in extending their marketing season, and in increasing their marketing opportunities than those adhering to an individual-lot settlement.

Service rendered by an association was also related to location. As services became more complex, western cooperatives, which sold most of their products in markets more distantly removed from the production area, increased in importance. Thus, coordination of services appeared another way the more distant associations dealt with problems of transportation and distribution not experienced by those nearer to their markets.

Use of Grower-Member Contracts

To operate effectively within the changing market structure, more and more cooperatives are finding it essential to use cooperative marketing contracts.

A grower-member contract is an agreement between an association and a member stipulating the rights and responsibilities of each party in the marketing of a member's produce through the cooperative. The grower-member agrees to deliver all or a specified part of his produce to the association, to allow deductions for handling costs, and to be penalized if he breaks the contract. In return, the cooperative agrees to sell the member's produce to the best advantage under prevailing conditions and to make payment in a specified manner.

The main purposes of a contract are: (1) To provide an objective planning tool for making commitments for sales, labor, facilities, financing, supplies, and other resources; (2) to provide a legal basis for restraining outside interference with members and for bringing action against a member for nonperformance; and (3) to provide an objective basis for an understanding between the member and the cooperative, and thus prevent misrepresentation.

In spite of the legal and economic aspects of a grower-member contract, it does not assure a cooperative of continued grower patronage. Alternative crops may, for example, become more attractive to a producer in which case he is apt to withdraw his patronage from the cooperative.

In the 1954-55 period, 84 percent of all fruit, vegetable, and tree nut cooperatives included in the study had marketing contracts with growers (table 6). A variation existed, however, in the extent to which they were used. In total, more than 9 of 10 pooling associations had marketing contracts with growers while 1 of 2 selling on an individual-lot basis did not.

While there were some differences in the stipulations of the contract, most required their members to market all tonnage through the association. A few did permit a grower to market a portion of his tonnage through other outlets. For example, if an association processed, it might

Table 6.--Fruit, vegetable, and tree nut cooperatives classified by by contract use, 1954-55

Use a contract	Pooling cooperatives		Nonpooling cooperatives		All cooperatives	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Yes	326	93.4	52	52.0	378	84.0
No	23	6.6	49	48.0	72	16.0
Total[1]	349	100.0	101	100.0	450	100.0

[1] Three pooling and two nonpooling associations did not provide information on the use of a contract.

exclude that portion of the crop sold fresh.

By Commodity Groups

A comparison of the use of contracts among the cooperatives marketing various commodity groups and located in different regions of the country appears in appendix table 4.

Contracts with growers predominated in every commodity group handled by cooperatives pooling the products of members. It was universally used by those handling apples, minor fruit, potatoes, and tree nuts. The lowest percentage was represented by those marketing *other* commodities.

Nonpooling organizations handling citrus, grapes, tree nut, and *other* products used a contract most frequently. It was least popular among the *fruit and vegetable* associations.

By Location

Use of grower-member contracts also varied among cooperatives located in the western, midwestern, and eastern regions. In the West, and to a lesser extent in the East, an agreement providing for delivery of produce to a pooling association was more or less taken for granted. Contracts were not as popular in the Midwest, and over one-fourth of the pooling cooperatives did not use them.

Use of a contract by nonpooling cooperatives was most prevalent in the West and least important in the Midwest. In these areas, 80 and 29 percent, respectively, reported its use.

By Service Rendered

The relationship between contract use and services provided to growers was reflected by a striking contrast in the proportion of the associations using different grower payment methods. The tabulation below shows this contrast.

Marketing service [1]	All cooperatives using contracts	Percentage of cooperatives using contracts		
		Pooling	Nonpooling	Total
	Number		*Percent*	
I	32	53.1	46.9	100
II	34	67.6	32.4	100
III	243	91.4	8.6	100
IV	69	92.8	7.2	100
Total or average	378	86.2	13.8	100

[1] I--sell only; II--grade or grade-sell; III--pack, or pack plus any combination of I and II; IV--process, or process plus any combination of I, II, and III.

Fifty-three percent of the associations limiting their services to selling and having cooperative marketing contracts with growers used a pool method of payment. As services to members were extended, pooling cooperatives, as a percent of all cooperatives using contracts, increased to 93 percent. The proportion not pooling declined from 47 to 7 percent of the total number.

As the primary purpose of a member marketing contract is to bind patrons to deliver all or a specified part of their crop to the cooperative, pooling associations--especially those located in the West--were the more successful in integrating the production of growers with their cooperative's marketing program. Furthermore, the degree of integration became more pronounced as the services provided became more complex.

Integration is an important feature, particularly when prices fluctuate greatly and pools are long in duration. If it were not for delivery and pooling requirements, a member would be encouraged to take advantage of a price higher than the average pool price (7). Such a situation would not permit an association to operate most effectively in developing a sound sales program and in making other long- and short-run decisions.

Payment Practices at Time of Delivery

The policy of fruit, vegetable, and tree nut cooperatives toward making payments to growers upon delivery of produce fell into one or more of five categories. These were: (1) Pay the approximate market price in cash; (2) pay a fixed percentage of the market price; (3) pay an initial amount, with the size determined by management for that particular season; (4) credit the grower with the approximate market price; and, (5) make no payment. In the following discussion, numbers (2) and (3) are referred to as an advance payment and numbers (4) and (5) as no advance payment.

Nearly half the cooperatives did not advance payment to members at the time produce was received (table 7). This practice was most common among those organizations using an individual-lot settlement and reflected the fact that a grower could sell on the day of his choosing and sales were promptly paid for. Data for individual commodity groups is shown in appendix table 5.

Of the 182 associations making partial payments, 171 operated on a pool basis. These represented 94 percent of the total number employing this practice.

The usual procedure for these cooperatives, in addition to making an initial payment, was to make a series of payments as the marketing season progressed and products were sold from each pool. The payments were generally kept within safe limits so that growers received, before final settlement, only a portion

Table 7.--Payment practices at time of delivery of fruit, vegetable, and tree nut cooperatives, 1954-55

Payment practice	Pooling cooperatives		Nonpooling cooperatives		All cooperatives	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Pay market price	10	2.9	25	25.3	35	7.9
Advance payment	171	49.4	11	11.1	182	40.9
No advance payment	153	44.2	61	61.6	214	48.1
Combination of plans	12	3.5	2	2.0	14	3.1
Total[1]	346	100.0	99	100.0	445	100.0

[1] Six pooling and four nonpooling associations did not provide data on payment practices.

Producer-member contracts are used to integrate grower production and marketing.

of the estimated pool receipts. When all produce in a pool had been sold, total pool expenses were deducted from total pool receipts and final settlement made on a pro-rate basis.

Under an individual-lot arrangement, definite purchase and price agreements were reached before title was relinquished by the grower. Any payments before final settlement usually constituted some percentage of the market price prevailing at the time the agreement was made.

Overall, the length of time before growers received full payment for their produce was related to the method of handling products and receipts. Generally, advances and final settlement on pools were similar, chronologically, to advances on an individual-lot basis. However, as the pooling period became longer in duration, greater delay resulted in making final returns to growers. This may be an undesirable feature of pooling from the viewpoint of an individual grower. But, from the viewpoint of all growers, longer pools may be most desirable if they enable an association to develop an orderly marketing program and to increase returns to all members.

Methods of Sharing Operating Expenses

Through their methods of obtaining funds to cover such expenses as wages, salaries, rent, freight charges, and interest, cooperatives can influence the quality of product delivered to them.

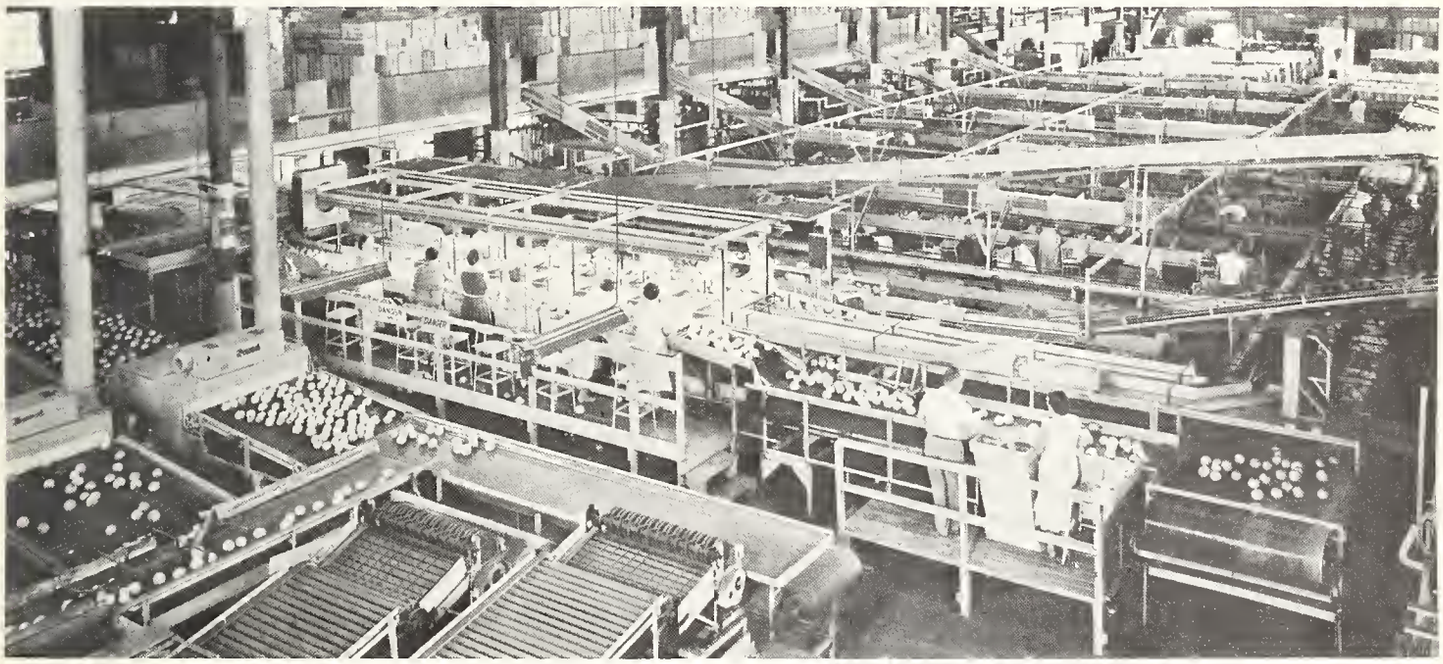
The cooperatives participating in this study generally allocated such costs among growers in proportion to patronage (table 8 and appendix table 6). Any excess of operating income over operating expenses was usually returned at the end of the association's fiscal year on the same basis.

Table 8.--Fruit, vegetable, and tree nut cooperatives classified by method of sharing operating expenses, 1954-55

Method of sharing operating expenses	Pooling cooperatives		Nonpooling cooperatives		All cooperatives	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Unit deduction	73	21.0	45	44.1	118	26.2
Percent deduction	13	3.7	16	15.7	29	6.4
Receipts less expenses	86	24.7	25	24.5	111	24.7
Unit and receipts less expenses	164	47.1	6	5.9	170	37.8
Other	12	3.5	10	9.8	22	4.9
Total[1]	348	100.0	102	100.0	450	100.0

[1] Four pooling and one nonpooling association did not reply to this question.

Costs of operation were most commonly prorated on the basis of a uniform charge per unit marketed, total sales receipts less total expenses, or both. Cooperatives using these methods represented 26, 25, and 38 percent, respectively, of the total number. The first method--that of a uniform charge--involved deducting a flat charge per bushel, crate, hundredweight, or some other unit from the sales return of each patron. It was most commonly used by nonpooling cooperatives and was third in preference by the pooling group.



Large-volume operations such as this are often found in the citrus industry. Cooperatives with large volumes generally use the pool method of payment.

The second method--that of deducting expenses from receipts before remitting a return to growers--was used equally by the pooling and nonpooling groups. Under this system, cooperatives handling products on a pool basis assigned a fair share of the association's total expenses to each pool and, upon closing the pool, deducted these from total pool receipts to obtain a net return to patrons. Those selling products as individual lots allocated the association's expenses on a commodity basis and, upon selling the commodity, deducted these from product receipts to obtain a net return to growers.

The third method--unit deduction and receipts less expenses--was preferred by the pooling cooperatives. Under this method, the cooperative deducted a flat charge per unit marketed by the grower. Any savings resulting from operating efficiency was refunded to the patron in form of an equity certificate, cash, or both. A typical procedure, when investment certificates were issued, was for the association to use a revolving fund plan. Current accumulations were employed to retire the oldest outstanding investments of patrons and others. These funds continued to revolve, thereby placing the responsibility for supplying capital with current patrons.

Percent deductions or a combination of methods were employed by a few cooperatives. The percent deduction system permits prorating expenses on a dollar volume basis. For example, an association may deduct three percent of the gross receipts as full compensation for its services. This method was principally used by nonpooling cooperatives marketing *mixed deciduous fruit* or *minor fruit*. Combinations of the methods named were important sources of operating capital for nonpooling cooperatives marketing mixed deciduous fruits or potatoes.

According to the data, no one method of sharing operating costs was used by all cooperatives. Deriving revenue from a physical unit basis may be rather easily done but is burdensome on lower-grade produce. When charges are on a sales value basis, a unit of high-quality produce is charged more than a similar unit of lower grade. To the extent that this narrows the price differential between grades, high-quality production is discouraged.

From the viewpoint of the fruit, vegetable, and tree nut industry, production of high-quality produce is desirable and this is probably one reason prorating expenses on a flat rate basis was so popular among these associations (2). And, to the extent that prices vary more proportionately than volume, which is characteristic of some agricultural products, prorating expenses on a flat rate basis generally provides a more stable source of funds.

Volume of Business

Another measure of an association's ability to meet the needs of large-scale buyers may be gained by considering the dollar volume of produce marketed in a recent period not affected by crop failure or other unusual circumstances.

For the 454 fruit, vegetable, and tree nut cooperatives supplying information, the relation between volume and grower payment methods was as follows:

Normal dollar volume	All cooperatives	Percentage of all cooperatives		
		Pooling	Nonpooling	Total
	Number		*Percent*	
Less than $100,000	66	45.5	54.5	100
$100,000 to $399,999	128	72.7	27.3	100
$400,000 to $699,999	94	86.2	13.8	100
$700,000 to $999,999	49	77.6	22.4	100
$1,000,000 and over	117	94.0	6.0	100
Total or average[1]	454	77.5	22.5	100

[1] One nonpooling association provided no information on volume.

As annual volume increased from less than $100,000 to $1 million or more, pooling cooperatives, as a percent of all cooperatives, increased from 46 to 94 percent (appendix table 7). The average dollar volume, based upon returns to growers, was $829,000 for those using pools and $373,000 for those selling on an individual-lot basis. Approximately two of three pooling cooperatives returned $400,000 or more to their members while two of three nonpooling associations returned less than this amount.

By Location

In addition to varying by commodity groups and grower payment methods, volume of business also varied by location. Of the 117 cooperatives returning $1 million or more to growers, 76.9 percent were located in the West, 3.4 percent in the Midwest and 19.7 percent in the East (appendix table 8). Over half of these were located in California alone. Florida ranked second with 20 percent.

All the larger nonpooling associations were located in the eastern region with 57 percent in Florida.

In total, the 117 cooperatives, while representing only 26 percent of all associations participating in the study, accounted for 63 percent of the total amount returned to growers in the period under consideration.

By Contract Use

To gain some knowledge of the relation between volume of business, use of grower-member contracts, and grower payment methods, the data was summarized as shown below. It might be expected that as annual volume increased, the use of grower marketing contracts with pools would become more pronounced.

Volume of business	Cooperatives using contracts	Percentage of all cooperatives using contracts		
		Pooling	Nonpooling	Total
	Number		*Percent*	
Less than $100,000	36	63.9	36.1	100
$100,000 to $399,999	104	81.7	18.3	100
$400,000 to $699,999	84	88.1	11.9	100
$700,000 to $999,999	42	88.1	11.9	100
$1,000,000 and over	112	95.5	4.5	100
Total or average	378	86.2	13.8	100

The data shows that an increase in business volume was associated with an increase in the proportion of the cooperatives using pools and contracts. As volume increased from less than $100,000 to $1 million or more, pooling cooperatives, as a proportion of all cooperatives using

contracts, increased from 64 to 96 percent.

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On the basis of the factors discussed in this section of the report, it is reasonable to conclude that fruit, vegetable, and tree nut cooperatives using a pooling method for paying growers were best able to capitalize on the changes taking place in the market structure.

In contrast to those handling products on an individual-lot basis, these cooperatives handled a greater number of commodities, offered more services to their members, had the greatest opportunity for developing an orderly marketing program, and relied more heavily upon a grower-member contract to integrate the production practices of growers with their association's marketing requirements.

By handling a greater number of commodities, pooling cooperatives provided more product diversification; by providing a complete set of marketing services, they more fully utilized alternative marketing outlets; and by relying more heavily upon cooperative marketing contracts, they were assured of more stable supplies upon which to develop a sounder sales program.

Pool Payment Practices

Of the 352 cooperatives pooling products and sales, 349 used a multiple pooling system. Each kind or quality of product handled was pooled separately. Returns were paid to growers on the basis of the average prices received for products of similar nature.

Three processing cooperatives--two handling *fruits and vegetables* and one handling *mixed deciduous fruit*--determined growers' returns on the basis of a single pool. Instead of treating each kind or quality of produce as separate lots, all were treated as a single lot. Final returns were prorated to all patrons by the same percentage relationship that overall returns were to the total commercial market value of all products marketed in a fiscal year. For example, if overall sales proceeds were 104 percent of commercial value of all products handled, each and every grower would receive 104 percent of the commercial market value for his deliveries (5).

Both concepts of pooling have one thing in common. In the sale of products and in the allocation of receipts, produce is handled on a lot basis--as several lots in the case of multiple pooling, or as one lot in the case of a single pool.

Adjusting Pools to Circumstances

The simplest kind of pool could be used where an association handled only one kind, variety, and grade of product for a given day in a local area. Pooling arrangements become more complex when: (1) The number of products handled increases, (2) there are several varieties of each product, (3) the length of the pooling period is increased and (4) the pooling system is extended beyond a local area.

Since each of these is capable of independent variation, several pooling arrangements, each differing in at least one respect from the others, are possible. For example, if a cooperative utilized all possible combinations of the five single factors shown on page 44 of the appendix as a basis for pooling, it would have at least 31 individual pools. As each requires determination with respect to number and content, this brief listing in no way reveals the diversity of pools which were used by the cooperatives included in this survey.

Most fruit and vegetable cooperatives pooled on the basis of variety. In addition, these associations further divided their variety pools into various grades and sizes. This practice was most popular among those marketing citrus, apples, soft deciduous fruit, apples and soft deciduous fruit, and potatoes.

One example of the adaptability of pooling to special circumstances was illustrated by the citrus cooperatives. Certain groves with warm exposure consistently yield early maturing fruit which may well be the most valuable fruit delivered throughout the season. For this reason, some associations operated preseason pools designed to benefit growers with the ability to deliver their fruit first.

As another example, tree nut cooperatives generally established from one to three pools a season, each determined by time of delivery. As major emphasis was upon the holiday season, the associations encouraged members to make early deliveries. Normally, more than 95 percent of all nuts were included in the first or second pool, or both. The remaining portion was included in a cull pool comprising all tree nuts not suitable for in-shell sale (4).

Pooling arrangements were also used as a technique for distributing economic risks arising from short-time price fluctuations. From this viewpoint, a relatively long pooling period is desirable and is probably the reason that three of five cooperatives used full or part-season pools (appendix table 9).

Excluding *berries,* full-season pools were preferred by cooperatives handling fruit, *fruits and vegetables,* and *other,* while part-season pools were favored by those handling tree nuts. A daily pool was first in preference among the berry cooperatives while mixed vegatable associations favored a weekly pool.

Pooling is simplified if, among other things, an association handles products of uniform quality.

It is interesting to note that there has been no relative change in the past three decades in the length of period over which important commodity groups were pooled. A comparison of an analysis made in 1922 by A. W. McKay, and W. J. Kuhrt, with the results of this study show the following: Seasonal pools were most frequently used by citrus, apple, and grape cooperatives; daily pools were primarily used by berry associations; while weekly pools were important for those handling potatoes (6) (appendix table 10).

To sum up, the pooling plan used by an association should have at least three objectives: (1) To handle produce in such a way as to obtain under prevailing price-cost relationships the largest total net return to the association as a whole; (2) to divide total net returns among members on an equitable basis; and (3) to fulfill prevailing market requirements.

In accomplishing these objectives, a cooperative can employ either a multiple or a single pool plan. When a multiple pool allocation is used, separate accounts are kept for each pool and growers furnishing produce to each pool receive the average pool price. The allocation of products among the various pools must, of course, be consistent with the terms specified in the contract.

When a single pool allocation is used, the board of directors should declare the commercial value of each product in terms of price per pound, ton, or some other standard unit. Each grower is credited with the commercial value on the day of delivery. Management can then divert products into any pool it so desires or, if a contract is in effect, as specified therein. At the end of the association's operating year, overall net returns are determined and compared with the total commercial value. Each grower's return is determined by multiplying the value of his deliveries by the ratio existing between overall net returns and total commercial market value.

Regardless of the pool plan used, the quantities that growers are to deliver to the cooperative as the season progresses should be agreed upon in advance of the marketing season. Otherwise growers may attempt to regulate deliveries so that the largest portion of their produce reaches the market when the price is high. This may or may not be to the best interest of the association or of the grower in the long run.

Special Pool Considerations

The survey also sought to find out how pooling for nonmembers, variations in lot size, and Federal and State volume regulation programs affected the distribution of pool receipts.

Pooling for Nonmembers

The Internal Revenue Code provides for the exemption of marketing cooperatives from the payment of income taxes if, among other requirements, business with nonmembers does not exceed that done with members. Moreover, the operations of the association must be on a mutual basis with equal treatment for all patrons.

In the 1954-55 season, 25 percent of the cooperatives pooled for both members and nonmembers while 75

percent did not (appendix table 11). For those handling nonmember produce, the distribution of pool receipts, including cost of handling, was the same for all patrons.

To determine whether differences existed in the characteristics and operating practices of cooperatives which did and did not pool for nonmembers, the associations were compared as shown in appendix table 12. The data revealed similar operating practices but large differences in volume of business.

Most associations in each group provided services which included packaging, used grower-member contracts, and relied upon a unit deduction for sharing expenses. But, based upon returns to growers, cooperatives pooling only for members were, on the average, five times larger than those doing business with nonmembers.

Extending services to all growers is one way for a cooperative to become larger. And, to the extent that all patrons are treated alike with respect to the pooling of products, receipts and expenses, the practice is to be encouraged. Advantages accruing from economy of scale benefit members and nonmembers alike.

Handling Small Lots

Because the associations were patronized by both small and larger-scale producers, there was a difference in lot sizes handled. With the exception of tree nuts, however, small lots were pooled with other lots, regardless of lot size, rather than being handled separately or combined with other small lots (appendix table 13).

Six tree nut associations, or 43 percent, pooled all lots together, regardless of size. Another six maintained the identity of each separate small lot, and two combined all small lots together.

In total, lot size did not materially alter the manner in which pooling cooperatives handled and paid for produce. Approximately 6 of 10 pooled all lots together for purposes of paying members.

Diversion Payments

One hundred sixty-one cooperatives operated under a State or Federal volume regulation program which permitted the diversion of produce to secondary uses (appendix table 14).

Who is to take the loss or gain arising from a byproducts pool--the individual whose products were diverted from the usual channels of distribution or all members of the association?

In some cooperatives, diverted produce was handled on an individual account basis. One association, pooling on the basis of variety, paid the same price per unit irrespective of the form in which the product was sold. While other solutions to the central problem varied, most associations prorated returns arising from the byproducts pool among all members in proportion to the volume each transacted through the assocation. In other words, volume regulation programs caused little change in pooling practices. Each member received the same average price from all pools, including the byproducts pool.

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Appendix

Appendix table 1.--Proportion of pooling and nonpooling fruit, vegetable, and tree nut cooperatives handling one or more commodities, 1954-55

Commodity group	Pooling cooperatives				Nonpooling cooperatives			
	Total	Number of commodities handled			Total	Number of commodities handled		
		One	Two	More than two		One	Two	More than two
	Number	*Percent*			*Number*	*Percent*		
Fruit								
Citrus	163	49.1	33.7	17.2	2	50.0	-	50.0
Deciduous								
Apples	16	100.0	-	-	8	100.0	-	-
Berries	14	78.6	14.3	7.1	18	72.2	22.2	5.6
Grapes	23	100.0	-	-	4	100.0	-	-
Soft deciduous	12	83.3	-	16.7	10	80.0	-	20.0
Apples and soft deciduous	21	-	57.1	42.9	9	-	77.8	22.2
Mixed deciduous	11	-	18.2	81.8	3	-	-	100.0
Total deciduous	97	61.9	16.5	21.6	52	63.5	21.2	15.3
Minor fruit	11	90.9	-	9.1	3	100.0	-	-
Total fruit	271	55.4	26.2	18.4	57	64.9	19.3	15.8
Vegetables								
Potatoes	14	78.5	21.5	-	10	90.0	10.0	-
Mixed vegetables[1]	28	53.6	17.9	28.5	21	52.4	19.0	28.6
Total vegetables	42	61.9	19.0	19.1	31	64.5	16.1	19.4
Fruits and vegetables	17	-	-	100.0	7	-	14.3	85.7
Tree nuts	16	68.8	31.2	-	2	100.0	-	-
Other	3	-	-	100.0	1	-	-	100.0
Grand total	349	53.6	24.1	22.3	98	60.2	17.3	22.5

[1] Three pooling and five nonpooling associations did not enumerate the commodities included in this classification.

Appendix table 2.--Location of fruit, vegetable, and tree nut cooperatives, by regions, 1954-55

Commodity group	Region						Total	
	Western		Midwestern		Eastern			
Fruit	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Citrus	148	89.7	1	0.6	16	9.7	165	100
Deciduous								
Apples	17	70.8	-	-	7	29.2	24	100
Berries	7	21.9	23	71.9	2	6.2	32	100
Grapes	24	88.9	2	7.4	1	3.7	27	100
Soft deciduous	18	81.8	1	4.6	3	13.6	22	100
Apples and soft deciduous	18	60.0	7	23.3	5	16.7	30	100
Mixed deciduous	9	64.3	2	14.3	3	21.4	14	100
Total deciduous	93	62.4	35	23.5	21	14.1	149	100
Minor fruit	7	50.0	4	28.6	3	21.4	14	100
Total fruit	248	75.6	40	12.2	40	12.2	328	100
Vegetables								
Potatoes	9	37.5	4	16.7	11	45.8	24	100
Mixed vegetables	17	29.8	14	24.6	26	45.6	57	100
Total vegetables	26	32.1	18	22.2	37	45.7	81	100
Fruits and vegetables	11	45.8	3	12.5	10	41.7	24	100
Tree nuts	18	100.0	-	-	-	-	18	100
Other	2	50.0	2	50.0	-	-	4	100
Grand total	305	67.0	63	13.9	87	19.1	455	100

Appendix table 3.--Percent of fruit, vegetable, and tree nut cooperatives rendering specified marketing services, 1954-55

Commodity group	Pooling cooperatives				Nonpooling cooporatives			
	Marketing service rendered[1]				Marketing service rendered[1]			
	I	II	III	IV	I	II	III	IV
	Percent				*Percent*			
Fruit								
Citrus	1.2	1.2	93.9	3.7	-	-	100.0	-
Deciduous								
Apples	-	6.2	68.8	25.0	-	-	75.0	25.0
Berries	21.4	42.9	-	35.7	72.2	22.2	5.6	-
Grapes	13.1	17.4	30.4	39.1	25.0	25.0	50.0	-
Soft deciduous	-	8.3	66.7	25.0	40.0	20.0	10.0	30.0
Apples and soft deciduous	4.8	-	85.7	9.5	11.1	33.3	44.5	11.1
Mixed deciduous	-	9.1	54.5	36.4	33.3	-	33.3	33.4
Total deciduous	7.2	13.4	51.6	27.8	38.5	19.2	28.8	13.5
Minor fruit	9.1	-	9.1	81.8	-	66.7	33.3	-
Total fruit	3.7	5.5	75.3	15.5	35.1	21.0	31.6	12.3
Vegetables								
Potatoes	35.7	7.1	50.0	7.2	20.0	10.0	50.0	20.0
Mixed vegetables	9.7	9.7	64.5	16.1	34.6	11.5	38.5	15.4
Total vegetables	17.8	8.9	60.0	13.3	30.5	11.1	41.7	16.7
Fruits and vegetables	11.8	11.8	5.8	70.6	57.1	-	14.3	28.6
Tree nuts	6.2	25.0	18.8	50.0	-	50.0	-	50.0
Other	33.3	33.3	-	33.4	-	100.0	-	-
Grand total	6.2	7.4	66.8	19.6	34.0	17.5	33.0	15.5

[1] I - sell only; II - grade or grade-sell; III - pack, or pack plus any combination of I and II; IV - process, or process plus any combination of I, II, and III.

Appendix table 4.--Percent of pooling and nonpooling fruit, vegetable, and tree nut cooperatives using a market contract by regions, 1954-55

Commodity group	Pooling cooperatives				Nonpooling cooperatives[1]			
	Western[2]	Mid-western	Eastern	Weighted average	Western	Mid-western	Eastern	Weighted average
	Percent				*Percent*			
Fruit								
Citrus	100.0	100.0	80.0	98.2	100.0	-	100.0	100.0
Deciduous								
Apples	100.0	-	100.0	100.0	50.0	-	33.3	37.5
Berries	100.0	80.0	-	85.7	100.0	30.8	[3] 0	38.9
Grapes	90.5	100.0	0	87.0	100.0	100.0	-	100.0
Soft deciduous	83.3	-	-	83.3	83.3	0	100.0	88.9
Apples and soft deciduous	93.3	50.0	100.0	85.0	50.0	0	50.0	33.3
Mixed deciduous	87.5	100.0	50.0	81.8	100.0	0	100.0	66.7
Total deciduous	93.2	75.0	60.0	87.4	82.4	27.8	50.0	52.9
Minor fruit	100.0	100.0	100.0	100.0	100.0	50.0	-	66.7
Total fruit	97.3	78.9	78.3	94.4	84.2	30.0	52.9	54.4
Vegetables								
Potatoes	100.0	100.0	100.0	100.0	66.7	33.3	50.0	50.0
Mixed vegetables	90.9	75.0	75.0	80.6	60.0	16.7	50.0	44.0
Total vegetables	94.1	77.8	84.2	86.7	62.5	22.2	50.0	45.7
Fruit and vegetables	100.0	50.0	100.0	94.1	100.0	0	0	28.9
Tree nuts	100.0	-	-	100.0	100.0	-	-	100.0
Other	100.0	0	-	66.7	-	100.0	-	100.0
Grand Total	97.4	74.2	83.3	93.4	80.1	29.0	46.2	51.5

[1] One mixed vegetable cooperative in the West and one soft deciduous fruit cooperative in the Midwest did not provide information on the use of a contract.

[2] One apple, one apple and soft deciduous fruit, and one tree nut association did not provide information on contract use.

[3] In the table a zero means that cooperatives were represented but did not use a contract in contrast to a dash, which means that no cooperatives were represented.

Appendix table 5.--Fruit, vegetable, and tree nut cooperatives classified by payment practices at time of delivery, 1954-55

Commodity group	Payment practices at time of delivery							
	Pooling cooperatives[1]				Nonpooling cooperatives[2]			
	Pay market price	Make advance	No advance	Combination	Pay market price	Make advance	No advance	Combination
	Percent				*Percent*			
Fruit								
Citrus	.6	58.9	39.9	0.6	-	-	100.0	-
Deciduous								
Apples	-	-	18.7	81.3	25.0	-	75.0	-
Berries	7.7	38.5	53.8	-	27.8	16.7	44.4	11.1
Grapes	-	71.4	23.8	4.8	-	25.0	75.0	-
Soft deciduous	9.1	54.5	27.3	9.1	20.0	10.0	70.0	-
Apples and soft deciduous	-	4.8	95.2	-	-	14.3	85.7	-
Mixed deciduous	-	18.2	72.7	9.1	33.3	-	66.7	-
Total deciduous	2.2	34.4	60.2	3.2	20.0	12.0	64.0	4.0
Minor fruit	9.1	54.5	18.2	18.2	33.3	-	66.7	-
Total fruit	1.5	50.2	46.1	2.2	20.0	10.9	65.5	3.6
Vegetables								
Potatoes	16.7	33.3	50.0	-	30.0	-	70.0	-
Mixed vegetables	9.7	19.4	64.5	6.4	24.0	12.0	64.0	-
Total vegetables	11.6	23.3	60.5	4.6	25.7	8.6	65.7	-
Fruits and vegetables	5.9	70.6	17.6	5.9	66.6	16.7	16.7	-
Tree nuts	-	81.3	-	18.7	-	50.0	50.0	-
Other	-	66.7	33.3	-	100.0	-	-	-
Grand total	2.9	49.4	44.2	3.5	25.3	11.1	61.6	2.0

[1] One berry, two grape, one soft deciduous fruit, and two potato associations did not provide data on payment practices.

[2] Two apple and soft deciduous fruit, one mixed vegetable, and one fruit and vegetable association did not provide data on payment practices.

Appendix table 6.--Fruit, vegetable, and tree nut cooperatives classified by method of sharing operating expenses among patrons, 1954-55

Commodity group	Method of sharing operating expenses among patrons									
	Pooling cooperatives[1]					Nonpooling cooperatives[2]				
	Unit deduction	Percent deduction	Receipts less expenses	Unit and receipts less expenses	Other	Unit deduction	Percent deduction	Receipts less expenses	Unit and receipts less expenses	Other
	Percent					*Percent*				
Fruit										
Citrus	4.3	-	8.0	87.7	-	50.0	-	-	50.0	-
Deciduous										
Apples	43.8	-	37.5	18.7	-	37.5	12.5	25.0	25.0	-
Berries	28.6	7.1	28.6	28.6	7.1	44.4	16.7	33.3	-	5.6
Grapes	18.2	-	68.2	4.5	9.1	75.0	-	25.0	-	-
Soft deciduous	16.7	8.3	50.0	16.7	8.3	60.0	20.0	10.0	-	10.0
Apples and soft deciduous	62.0	-	19.0	9.5	9.5	44.5	-	22.2	22.2	11.1
Mixed deciduous	54.5	-	18.2	27.3	-	-	66.7	-	-	33.3
Total deciduous	37.5	2.1	38.5	15.6	6.3	46.2	15.4	23.0	7.7	7.7
Minor fruit	9.1	18.2	45.5	9.0	18.2	33.3	66.7	-	-	-
Total fruit	16.4	1.5	20.4	58.7	3.0	45.6	17.5	21.1	8.8	7.0
Vegetables										
Potatoes	57.1	-	14.3	14.3	14.3	40.0	10.0	20.0	-	30.0
Mixed vegetables	45.2	19.4	29.0	-	6.4	50.0	11.5	27.0	-	11.5
Total vegetables	48.9	13.3	24.5	4.4	8.9	47.2	11.1	25.0	-	16.7
Fruits and vegetables	6.3	12.4	75.0	6.3	-	-	33.3	50.0	16.7	-
Tree nuts	33.3	-	46.7	20.0	-	100.0	-	-	-	-
Other	33.3	33.3	33.4	-	-	-	-	100.0	-	-
Grand Total	21.0	3.7	24.7	47.1	3.5	44.1	15.7	24.5	5.9	9.8

[1] One citrus, one grape, one tree nut, and one fruit and vegetable association did not answer this question.
[2] One fruit and vegetable association did not reply to this question.

Appendix table 7.--Average annual amount returned to growers by fruit, vegetable, and tree nut cooperatives, 1954-55

Commodity group	Average annual volume	
	Pooling cooperatives	Nonpooling cooperatives
Fruit		
Citrus	$1,004,316	$587,676
Deciduous		
Apples	534,797	329,334
Berries	519,347	136,726
Grapes	419,671	136,726
Soft deciduous	497,594	289,543
Apples and soft deciduous	682,536	438,679
Mixed deciduous	669,436	166,787
All deciduous	545,136	233,545
Minor fruit	501,758	143,333
All fruit	816,548	238,298
Vegetables		
Potatoes	931,060	301,848
Mixed vegetables	520,675	646,610
All vegetables	648,350	548,107
Fruits and vegetables	1,116,633	602,574
Tree nuts	1,102,832	200,000
Other	1,284,213	151,283
Average	828,712	373,241

Appendix table 8.--Fruit, vegetable, and tree nut cooperatives, classified by volume of business and location, 1954-55

Volume of business	Western		Midwestern		Eastern		Total
	Pooling	Non-pooling	Pooling	Non-pooling	Pooling	Non-pooling[1]	
	Number		*Number*		*Number*		*Number*
Less than $100,000	10	7	12	17	8	12	66
$100,000 to $399,999	71	14	13	11	9	10	128
$400,000 to $699,999	68	7	1	1	12	5	94
$700,000 to $999,999	34	4	1	3	3	4	49
$1,000,000 and over	90	-	4	-	16	7	117
Total	273	32	31	32	48	38	454

[1] One association provided no information on volume.

Appendix table 9.--Length of pools used by fruit, vegetable, and tree nut cooperatives, 1954-55

Commodity group	Cooperative using													
	Full season		Part season		Monthly		Weekly		Daily		Other lengths		Total	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Fruit														
Citrus	106	53.0	24	12.0	6	3.0	30	15.0	-	-	34	17.0	200	100
Deciduous														
Apples	13	68.4	1	5.3	-	-	2	10.5	-	-	3	15.8	19	100
Berries	4	30.8	1	7.7	-	-	2	15.3	5	38.5	1	7.7	13	100
Grapes	20	87.0	-	-	-	-	-	-	2	8.7	1	4.3	23	100
Soft deciduous	11	78.7	-	-	1	7.1	1	.1	1	7.1	-	-	14	100
Apple and soft deciduous	18	78.4	1	4.3	-	-	1	4.3	-	-	3	13.0	23	100
Mixed deciduous	8	57.2	3	21.5	-	-	1	7.1	1	7.1	1	7.1	14	100
Total deciduous	74	69.8	6	5.7	1	.9	7	6.6	9	8.5	9	8.5	106	100
Minor fruit	7	53.9	1	7.7	1	7.7	1	7.7	-	-	3	23.0	13	100
Total fruit	187	58.7	31	9.7	8	2.5	38	11.9	9	2.8	46	14.4	319	100
Vegetables														
Potatoes	4	28.6	-	-	1	7.1	4	28.6	3	21.4	2	14.3	14	100
Mixed vegetables	9	28.1	1	3.1	-	-	13	40.7	5	15.6	4	12.5	32	100
Total vegetables	13	28.2	1	2.2	1	2.2	17	37.0	8	7.	6	13.0	46	100
Fruits and vegetables	11	61.1	1	5.6	-	-	1	5.6	2	11.1	3	16.6	18	100
Tree nuts	6	33.3	11	61.1	-	-	-	-	-	-	1	5.6	18	100
Other	2	50.0	-	-	-	-	1	25.0	-	-	1	25.0	4	100
Grand total	219	54.1	44	10.9	9	2.2	57	14.1	19	4.7	57	14.0	[1]405	100

[1] Some cooperatives used pools of more than one length.

Appendix table 10.--Relative use of pooling periods of different durations made by 478 fruit and vegetable marketing associations, 1922

Commodity groups	1 day	2 to 3 days	1 week	8 to 15 days	1 month	One-fourth of season	One-third of season	One-half of season	Full season	Associations reporting
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Number*
Apples	-	2.6	-	-	-	-	-	10.2	87.2	39
Citrus fruit	-	.7	7.3	12.0	22.0	15.3	8.0	4.0	30.7	150
Grapes	-	35.7	-	7.1	-	-	-	-	57.2	14
Strawberries	59.2	7.3	7.4	-	-	-	-	-	26.0	27
Peaches	-	-	14.3	14.3	-	-	-	-	71.4	7
Cranberries	-	-	20.0	-	-	-	-	-	80.0	5
Miscellaneous fruit	-	-	-	-	-	-	-	25.0	75.0	4
Several fruits	11.2	-	12.5	2.5	-	-	1.3	-	72.5	80
Potatoes	14.6	12.5	29.2	8.3	10.4	-	4.2	2.1	18.8	48
Sweet potatoes	-	-	8.0	-	8.0	-	4.0	-	80.0	27
Watermelons	-	83.3	-	16.7	-	-	-	-	-	6
Onions	-	-	75.0	-	-	-	-	-	25.0	4
Miscellaneous vegetables	18.2	-	9.1	9.1	9.1	-	-	-	54.5	11
Several vegetables	33.3	4.2	20.8	4.2	4.2	-	-	-	33.3	24
Fruits and vegetables	21.9	6.3	15.6	3.1	18.7	-	-	-	34.4	32

Source: McKay, A. W. and Kuhrt, W. J. Management Problems of Cooperative Association Marketing Fruits and Vegetables. U. S. Dept. of Agr. Bul. 1414, p. 36, 1926.

Appendix table 11.--Fruit, vegetable and tree nut cooperatives that did and did not pool for nonmembers, 1954-55

Commodity group	Pool for nonmembers				Total	
	Yes		No			
Fruit	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Citrus	8	4.9	155	95.1	163	100
Deciduous						
Apples	14	87.5	2	12.5	16	100
Berries	2	14.3	12	85.7	14	100
Grapes	5	23.8	16	76.2	21	100
Soft deciduous	5	45.5	6	54.5	11	100
Apples and soft deciduous	16	76.2	5	23.8	21	100
Mixed deciduous	6	54.5	5	45.5	11	100
Total deciduous	48	51.1	46	48.9	94	100
Minor fruit	2	18.2	9	81.8	11	100
Total fruit	58	21.6	210	78.4	268	100
Vegetables						
Potatoes	7	53.8	6	46.2	13	100
Mixed vegetables	13	41.9	18	58.1	31	100
Total vegetables	20	45.5	24	54.5	44	100
Fruits and vegetables	7	43.8	9	56.2	16	100
Tree nuts	2	12.5	14	87.5	16	100
Other	-	-	3	100.0	3	100
Grand total	87	25.1	260	74.9	[1] 347	100

[1] One soft deciduous fruit, two grape, one potato and one fruit and vegetable association provided no information on pooling for nonmembers.

Appendix table 12.--Characteristics and operating practices of fruit, vegetable, and tree nut cooperatives that did and did not pool for nonmembers, 1954-55

Items	Pool for nonmembers			
	Yes	No	No answer	Total
		Number		
Marketing services rendered[1]				
I	4	17	1	22
II	11	15	-	26
III	45	188	2	235
IV	27	40	2	69
Total	87	260	5	352
Use of producer-member contract				
Use contract	75	249	2	326
Do not use contract	10	10	3	23
No answer	2	1	-	3
Total	87	260	5	352
Method of sharing operating expenses				
Unit deduction	35	36	2	73
Percent deduction	4	8	1	13
Total sales less total expenses	32	54	-	86
Unit deduction and total sales less total expenses	10	153	1	164
Other	4	8	-	12
No answer	2	1	1	4
Total	87	260	5	352
Normal dollar volume				
Less than $100,000	12	18	-	30
$100,000 to $399,999	27	64	2	93
$400,000 to $699,999	24	55	2	81
$700,000 to $999,999	4	34	-	38
$1,000,000 and over	20	89	1	110
Total	87	260	5	352

[1] I-sell only; II-grade or grade-sell; III-pack, or pack plus any combination of I and II; IV-process, or process plus any combination of I, II, and III.

Appendix table 13.--Handling of small lots by fruit, vegetable, and tree nut pooling cooperatives, 1954-55

Commodity groups	Handling small lots					
	Pooled[1]	Separately	Combined[2]	Combination	No answer	Total
			Number			
Fruit						
Citrus	80	61	11	9	2	163
Deciduous						
Apples	11	3	-	2	-	16
Berries	9	2	1	-	2	14
Grapes	19	2	1	-	1	23
Soft deciduous	10	1	-	-	1	12
Apples and soft deciduous	14	4	1	1	1	21
Mixed deciduous	7	4	-	-	-	11
Total deciduous	70	16	3	3	5	97
Minor fruit	7	4	-	-	-	11
Total fruit	157	81	14	12	7	271
Vegetables						
Potatoes	8	4	-	1	1	14
Mixed vegetables	20	5	2	2	2	31
Total vegetables	28	9	2	3	3	45
Fruit and vegetables	11	1	2	1	2	17
Tree nuts	6	6	2	-	2	16
Other	3	-	-	-	-	3
Grand total	205	97	20	16	14	352

[1] Pooled with other lots regardless of size.
[2] Pooled with other small lots.

Appendix table 14.--Number of fruit, vegetable, and tree nut pooling cooperatives operating under a Federal or State volume regulation program, 1954-55

Commodity group	Operate under program			
	Yes	No	No answer	Total
		Number		
Fruit				
Citrus	140	22	1	163
Deciduous				
Apples	2	14	-	16
Berries	1	11	2	14
Grapes	2	19	2	23
Soft deciduous	1	9	2	12
Apples and soft deciduous	1	20	-	21
Mixed deciduous	3	8	-	11
Total deciduous	10	81	6	97
Minor fruit	-	11	-	11
Total	150	114	7	271
Vegetables				
Potatoes	-	11	3	14
Mixed vegetables	1	28	2	31
Total vegetables	1	39	5	45
Fruits and vegetables	-	15	2	17
Tree nuts	9	7	-	16
Other	1	2	-	3
Grand total	161	177	14	352

Computation of the Number of Pooling Arrangements

Five factors were used as a basis for establishing a pooling system. These were:

1. Grade
2. Size
3. Variety
4. Time
5. Processed

The number of combinations of n factors taken r at a time is computed as:

$$C(n,r) = \frac{n!}{r!(n-r)!}$$

By making appropriate substitutions, these five factors can be grouped into 31 different combinations, each combination differing in at least one respect from the others. The total number of combinations is calculated as follows:

$$C(5,1) = \frac{5!}{4!} = 5$$

$$C(5,2) = \frac{5!}{2!(3)!} = 10$$

$$C(5,3) = \frac{5!}{3!(2)!} = 10$$

$$C(5,4) = \frac{5!}{4!(1)!} = 5$$

$$C(5,5) = \frac{5!}{5!} = 1$$

Grand total 31

* U.S. GOVERNMENT PRINTING OFFICE : 1959 O—533375

Other Publications Available

Farmer Cooperatives in the United States, FCS Bulletin 1.

Legal Phases of Farmer Cooperatives, FCS Bulletin 10. L. S. Hulbert and R. J. Mischler.

Organizing a Farmer Cooperative, FCS Circular 18.

Using Your Fruit and Vegetable Co-op, FCS Educational Circular 7. W. F. Buck.

Fruit and Vegetable Bargaining Cooperatives, FCS Circular 25. W. M. McMillan.

Marketing Practices of Cooperatives Processing Canned and Frozen Fruits and Vegetables, Miscellaneous Report 151, A. L. Gessner and E. C. Collins.

Cooperative Fruit and Vegetable Shipping Point Auctions, Bulletin 64, C. K. Baker

Cooperative Marketing of Apples in the United States, Bulletin 55, J. H. Heckman and G. H. Goldsborough

Cooperative Marketing of Potatoes in the United States, Bulletin 62, G. M. Goldsborough

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