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# Marketing Eggs through a Purchasing Cooperative

University of Tennessee Agricultural Experiment Station

Eldon D. Smith

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# **MARKETING EGGS** *through a* **PURCHASING COOPERATIVE**

**A CASE STUDY**

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# MARKETING EGGS *through a* PURCHASING COOPERATIVE

## A Case Study

### INTRODUCTION

#### Purpose and Scope of the Study

Tennessee has recently experienced an upsurge of cooperative activity, particularly in cooperative purchasing.<sup>1</sup> This upsurge has created renewed interest in cooperative efforts in presently untapped fields such as egg marketing.<sup>2</sup> This study is an attempt to provide a more reliable basis for evaluating these possibilities. It is an analysis of the experience of a single farm supply cooperative which has provided a small-scale egg marketing service for its patrons during the past four years.

The facts and interpretations which follow pertain only to the particular conditions under which this one cooperative operated. Therefore, it is impossible to say with assurance that other cooperatives would have similar experience.<sup>3</sup> But it does show (1) some of the major factors that may determine the advisability of such a service in other cooperatives and (2) the way that these factors may be fitted together into an over-all analysis by individual cooperatives. That is, this study provides an **example** of a method which could be adapted to a wide variety of local conditions.

#### Egg Production and Marketing Situation in Tennessee

Egg production, like most other enterprises in Tennessee, is a part of a pattern of general farming. In 1954 the average farm selling some eggs sold only 789 dozen.<sup>4</sup> This would mean that at the average rate of lay of 148 eggs per layer per year, the average

<sup>1</sup>In 1944-45 there were 54 marketing and purchasing cooperatives in Tennessee with 93,150 members and \$30,570,000 annual business. In 1953-54 there were 137 associations with 130,447 members and annual business of \$66,529,000. A total of 15 supply associations were operating in 1944-45 with 17,000 members and \$1,500,000 annual business. By 1953-54 the comparable figures were 82 associations, 55,787 members and \$19,181,000 business. See Farm Credit Administration Bulletin 54 (1947) and Farmer Co-operative Service, General Report 29 (1956).

<sup>2</sup>For example, a resolution of the Tennessee Farm Bureau Federation asked that a committee be appointed to make a "thorough and complete study of the fields, possibilities and advisabilities of such (marketing) ventures." It stated also that "We further recommend that the University (of Tennessee) give more attention to studies and information dealing with cooperative marketing of farm products." (Resolutions of the Tennessee Farm Bureau Federation for 1956, adopted November 16, 1955, pp. 23-24).

<sup>3</sup>This also would be the case if a large number of cooperatives were analyzed in terms of average conditions, costs, etc., since each would have to judge how its individual situation might affect the result. In any event, this appears to be the only systematic attempt by a purchasing cooperative to provide such a service in Tennessee.

<sup>4</sup>Data on number of farms based on U. S. Census of Agriculture, 1955; data on egg sales based on Federal-State Crop Reporting Service estimates.

farm flock had an equivalent of only 64 hens producing eggs for market.<sup>5</sup> In addition, the farms producing eggs for sale constituted only about one-third of all farms in Tennessee.

Partly because of the small volume of eggs per flock, a pattern of non-specialized marketing agencies has persisted in rural areas. In a 1948 survey it was found that 49 per cent of the eggs sold by farmers were sold to rolling stores and country stores. Stores in cities and incorporated towns handled 32 per cent of total sales by farmers.<sup>6</sup> In another survey of egg marketing agencies it was found that only 39 of 86 country stores buying eggs had candling facilities and only 21 of 42 rolling stores had such facilities. Only one country store and none of the rolling stores graded the eggs according to size.<sup>7</sup> Information is not available regarding refrigeration for eggs handled by primary buyers in Tennessee. However, a 1947 survey covering nine Southern states indicated that 97 percent of rural stores and hucksters and 89 percent of non-rural retail stores handling eggs did not refrigerate them.<sup>8</sup> Prices paid to farmers, therefore, do not reflect quality differences, and losses due to mechanical damage or quality deterioration tend to be high.

### Problems and Possibilities of Cooperative Egg Marketing

Cooperative marketing often has been a means of improving marketing facilities and returns from farm products. However, cooperative egg marketing has been generally unsuccessful in Tennessee, because volume of business has been inadequate. Agricultural Extension Service specialists have observed that specialized egg marketing firms with less than 300 cases per week are seldom successful in Tennessee. But 36 counties in Tennessee, according to the Census, produced for sale less than 100 cases of eggs per week in 1954. Sales in only 24 counties reached the level of 200 cases or more per week.<sup>9</sup> This, of course, explains why non-specialized outlets continue to predominate, except in a few counties where commercial volume production has developed.

<sup>5</sup>Agricultural Statistics, 1955, Table 599.

<sup>6</sup>B. D. Raskopf and Clyde R. Keaton, *Practices of Market Egg Producers*, Rural Research Series, Monograph 249, University of Tennessee, Agricultural Economics and Rural Sociology Department, 1949, p. 28.

<sup>7</sup>B. D. Raskopf and Clyde R. Keaton, *Distributive Functions of Primary Egg Buyers in Tennessee*, Rural Research Series, Monograph 254, University of Tennessee, Agricultural Economics and Rural Sociology Department, 1950.

<sup>8</sup>*Marketing Eggs at the First Buyer Level in Nine Southern States*. Southern Cooperative Series Bulletin 18, December, 1951.

<sup>9</sup>Computations based on U. S. *Census of Agriculture*, 1955. Census figures may underestimate annual production substantially, but this underestimation would not effect the conclusion that production is relatively sparse in most areas of Tennessee.

If cooperative egg marketing is to be developed in areas where volume of business is likely to be low, it seems reasonable to believe that it must be carried on as one aspect of a diversified cooperative business. By combining egg marketing and other lines of business, fixed costs might be spread over sufficient total business volume to maintain relatively low unit operating costs. One such attempt has been made in Tennessee by a farm supply cooperative. In the discussion which follows the experience of this cooperative is analyzed in order to evaluate these possibilities. Also, some of the factors that determine the feasibility of this approach to cooperative egg marketing are discussed.

## EGG MARKETING METHODS OF CLAIBORNE PRODUCERS

### Background and History

Claiborne Producers Cooperative was organized in 1945 to replace a Farm Bureau cooperative which had been operating since 1933. Its main line of business has been farm supplies. Relatively unsatisfactory rented warehouse facilities were used until 1951, when a site was purchased and a modern warehouse (with salesroom and offices) was constructed. Since then, volume of business increased from \$227,500 to \$292,700 in 1956. The present manager has been employed since 1950. In addition to farm supplies and eggs, this cooperative handles live poultry, black walnuts, and strawberries.

This cooperative has marketed eggs for its patrons since June 1952. In the period August 23, 1955, to August 23, 1956, the cooperative handled 59,840 dozen eggs for its patrons valued at the farm level at \$25,474. This is equal to about one-fifth of the total sales of eggs for the Census year 1954 in Claiborne County.

The reason for starting the operation was at least in part incidental to an attempt to build volume of business in farm supplies to an economical level. It was felt that many people who had a few eggs to sell tended, for reasons of convenience and other factors, to buy their farm supplies at the same establishment where they sold eggs. Thus, the egg marketing operation has been regarded as complementary with the other cooperative enterprises, insofar as volume of business is concerned.

## Resale Outlets

The cooperative, from the start, attempted to establish direct sales outlets to grocery stores and restaurants in the Knoxville area. About 44,000 dozen eggs were sold to such outlets during the one-year period covered by this study. The feeling of the management and board was that regular delivery could be made at relatively little added cost. They felt that with few exceptions, feed, fertilizer and other supplies could be transported on the return trip from the Knoxville wholesale warehouse and fertilizer plant. The manager reports that this has been generally true, although the truck returns without a full load (five tons or more) about five or six times per year.

At present, about three-fifths of the eggs are sold in cartons on a graded basis. The remainder are graded and sold in 30-dozen cases. Edible, cracked eggs are sold to restaurants, usually at "salvage value" of 25 cents per dozen. Pullet eggs are sold through special store outlets in Middlesboro, Kentucky, about 16 miles from the cooperative plant. A small quantity of eggs is sold at retail to local people, co-op personnel, tradespeople, etc. These sales include most of the extra-large eggs for which there is no regular market at premium prices.

All surplus eggs, in excess of sales to retail outlets, are sold to wholesalers in Knoxville at their regular prices for the day of sale. However, less than one-fourth of all the eggs handled for patrons are sold in this manner.

## Facilities

Initially this cooperative had no refrigerated storage. Eggs were stored in a corner of the warehouse until the next delivery day. However, it was soon evident from complaints of customers that excessive deterioration in quality was occurring during the hot summer period. Therefore, a cooling room 7 feet high, 8 feet wide and 12 feet long with an attached grading room 8 feet by 12 feet was constructed within the regular warehouse. Principally, regular employees were used for construction labor. Additional labor was used only for installation of the refrigeration unit. The total cash outlay for both cooling room (including refrigeration equipment) and the candling room was \$906.71.

The only other facilities are a small grading machine (costing \$16.51) and a few small items such as a carton assembler and egg scale. The regular trucks are, of course, used for transporta-

tion except for the few cases of eggs hauled to Middlesboro which are hauled in a passenger car.

### **Method of Purchase and Quality Control**

Eggs are purchased mainly from farmers on an ungraded basis.<sup>10</sup> However, brown eggs are priced to farmers at two cents below white eggs since only white eggs are sold in cartons bearing the co-op label. Pullet eggs are priced on the basis of current resale value.

In the event that a producer delivers spoiled or low grade eggs, the manager discusses the matter with him. To date the manager reports no difficulty in correcting this problem.

No attempt has been made to separate the eggs from confined flocks, although the manager reports that most of the eggs are from confined birds.

To date no pickup service has been inaugurated. Producers deliver their eggs to the warehouse. An attempt has been made to encourage Friday and Saturday delivery, but for a number of reasons this has not been enforced. If freshness is maintained, regularity of delivery is not enforced.

### **Seasonal Deficits**

During a few weeks of the year, sales of eggs at retail outlets exceed receipts from farmers. The storage facilities are, of course, used to smooth out short-term fluctuations in receipts. However, when carryover is not adequate to supplement weekly receipts, additional eggs are purchased in the Knoxville market from a reliable source, recandled, cartoned and sold under the co-op label. About one-sixth as many eggs were purchased from wholesalers as were purchased from producers. No objections to the recandled eggs have been reported.

## **LABOR REQUIREMENTS IN EGG HANDLING OPERATIONS**

In marketing eggs one of the major factors that must be considered is the amount of labor required relative to the available unused labor and the cost of additional hired labor. Labor is used in two sets of operations if eggs are sold to retail outlets or if they must be transported to the wholesale dealer's platform. These

<sup>10</sup>The co-op buys eggs from one commercial producer who grades his eggs. This producer is paid on the basis of grade.



are (1) handling and preparation for market and (2) transportation and delivery. Tables 1 and 2 contain data pertaining to requirements for these operations. Although a hand grading system is currently used, labor requirements for both machine and hand grading are shown. The economic feasibility of hand grading compared to machine grading is discussed in another section of this bulletin.

### **Labor Required to Prepare Eggs for Market Under the Present System**

Under the present system a small hand-operated grading machine is used for sizing the eggs. Part of the eggs are cartoned (about 40,000 of a total of 59,840 dozen handled for patrons and 9,450 dozen purchased for resale) and the remainder are sold in 30-dozen cases. Total labor required may be computed by multiplying the number of dozen cartoned times the total requirements per dozen cartoned eggs and adding this to a comparable figure for uncartoned eggs.

Total requirements for cartoned eggs amount to about 2.6 to 3.0 man-minutes per dozen, including bookkeeping and additional time serving customers. Uncartoned eggs require 2.1 to 2.5 minutes per dozen. This requirement may vary slightly depending on average size of delivery, but within fairly broad limits this does not affect total requirements appreciably.

For a typical 1200-dozen week in which about 800 dozen cartoned and 400 dozen uncartoned eggs are sold, preparation for market would require about 48 to 56 man-hours of labor.

### **Labor Required to Prepare Eggs for Market Using Machine Grading**

Labor requirements depend in part on the type of equipment that is used. Several machines are now available which partially mechanize grading and candling. For comparative purposes one such machine was observed in operation on a commercial poultry farm near Knoxville. This machine is rated by the manufacturer at a capacity of about 10 cases of eggs per hour. Observation and the owner's experience indicate, however, that six cases (180 dozen) is a more realistic figure if two attendants are used. On the basis of this figure, requirements could be reduced by 1.2 to 1.8 minutes per dozen. Total requirements would be reduced from about 48-56 man-hours to about 19 man-hours for 1200 dozen.

Table 1—*Labor Requirements for Handling Eggs, by Volume Handled, Mechanical and Hand Grading\**

	Per Dozen <sup>3</sup> (Man Minutes)	Total Per Week					
		400 Dozen Per Week (Man Hours)	600 Dozen Per Week (Man Hours)	800 Dozen Per Week (Man Hours)	1200 Dozen Per Week (Man Hours)	1600 Dozen Per Week (Man Hours)	3200 Dozen Per Week (Man Hours)
1. Grading, candling and repacking in 30 dozen crates:							
a. Handoperated equipment <sup>1</sup> .....	2.0-2.4	13.2-16.0	20.0-24.0	26.4-32.0	40.0-48.0	52.8-64.0	105.6-128.0
b. Mechanical grader ..	.6	4.0	6.0	8.0	12.0	16.0	32.0
2. Assembling and dating cartons .....	.2	1.3	2.0	2.6	4.0	5.2	10.4
3. Packing eggs in cartons and packing cartons in 24 dozen cases ..	.3	2.0	3.0	4.0	6.0	8.0	16.0
4. Additional bookkeeping and time serving customers .....	.1	.6	1.0	1.3	2.0	2.6	5.2
5. Total							
a. Cartoned-hand grading <sup>2</sup> .....	2.6-3.0	17.1-19.9	26.0-30.0	34.3-39.9	52.0-60.0	68.6-79.8	137.2-159.6
b. Cartoned-machine grading <sup>2</sup> .....	1.1	8.6	11.0	14.6	22.0	29.2	58.4
c. 30 dozen cases-hand grading .....	2.1-2.5	13.8-16.6	21.0-25.0	27.7-33.3	42.0-50.0	55.4-66.6	110.8-133.2
d. 30 dozen cases-machine grading .....	.7	4.6	7.0	9.3	14.0	18.6	37.2

\*Based on data from Claiborne County Producers Cooperative and one private commercial egg producer.

<sup>1</sup>Range shown derived from two independent measures of labor required. The first is from social security records of payments made over a one-year period. The second is from timing the handling of one delivery.

<sup>2</sup>Data based on the way the system was actually operated. Probably .1 to .2 minutes per dozen could be saved by cartoning direct from the grader. This would save between 1.0 and 2.0 hours per week if 600 dozen were cartoned. However, under present management this is not feasible due to sporadic use of store labor.

<sup>3</sup>Computed from time required to handle 300 dozen cartoned eggs and 300 dozen uncartoned. The actual time for handling the eggs is equal to one-half this figure, but since two men are required for the operation, the man-hour requirements are twice the elapsed time.

## Hauling and Delivery Time

The labor required for delivery and hauling to market depends on the distance to be traveled, size of load, accessibility and dispersion of delivery points and number of dozen delivered to each customer.

In the operation of Claiborne Producers, over three-fourths of eggs handled are sold at retail outlets. Therefore, data shown in Table 2 for delivery time reflect mainly time for store-to-store distribution of 800 dozen per week. Two deliveries are made to each store each week on two trips weekly to Knoxville. This requires a total of about 8 man-hours per week or about .4 minutes per dozen.

Table 2—*Approximate Labor Requirements for Transporting and Delivering Eggs, by Volume Handled, 100 Miles Round Trip, Two Deliveries Per Week, Claiborne Producers Cooperative, New Tazewell, Tennessee, 1956<sup>1</sup>*

	400 Doz. Per Week		600 Doz. Per Week		800 Doz. Per Week	
	Man Minutes Per Dozen	Man Hours Per Week	Man Minutes Per Dozen	Man Hours Per Week	Man Minutes Per Dozen	Man Hours Per Week
1. Travel time, 100 miles round trip .....	.8	5.0	.5	5.0	.4	5.0
2. Delivery of eggs to stores <sup>2</sup> .....	.2	1.5	.2	2.2	.2	3.0
Total (1) and (2) .....	1.0	6.5	.7	7.2	.6	8.0

  

	1200 Doz. Per Week		1600 Doz. Per Week		2200 Doz. Per Week	
	Man Minutes Per Dozen	Man Hours Per Week	Man Minutes Per Dozen	Man Hours Per Week	Man Minutes Per Dozen	Man Hours Per Week
1. Travel time, 100 miles round trip .....	.2	5.0	.2	5.0	.1	5.0
2. Delivery of eggs to stores <sup>2</sup> .....	.2	4.4	.2	6.0	.2	12.0
Total (1) and (2) .....	.4	9.4	.4	11.0	.3	17.0

<sup>1</sup>Assuming 100 percent delivered to retail stores, present volume per customer, and present dispersion of customers.

<sup>2</sup>Actual sales to retail outlets or direct to consumers constituted about 5/6 of the 59,840 dozen eggs handled for patrons. About 9,450 dozen were purchased from dealers for resale and 13,895 were sold at wholesale.

It can be seen that since travel time is about the same regardless of size of load, if the volume handled is small, the time required per dozen becomes high. Up to a volume which could not be handled in two trips each week, requirements per dozen would diminish as volume increased. This means that if delivery to stores or wholesale dealers at a substantial distance

from the cooperative is required, very small volume **could** be an important deterrent to efficiency.

Total labor required for preparation and delivery under the present system with present volume amounts to an average of between 2.8 and 3.2 man-minutes per dozen, or a total of between 56 and 64 hours per week.

## COSTS AND MARGINS

### Definition of Costs

Costs of an enterprise such as egg marketing can be divided into two classes. First, additional cash expenditures may be involved which add to total operating costs of the cooperative. Secondly, resources such as labor may be used which were formerly used in some other activity.

The true cost of the goods or services formerly employed in another use is the value of the services which would have been provided if these resources had **not** been diverted to egg marketing. If, for example, labor were used which would have been idle, the true labor cost can be considered as zero. Of course, there is seldom a time when some task having a little value could not be found to occupy the time of the labor force. However, as a matter of judgment it is possible to distinguish instances when labor or other resources can be borrowed from one activity without **substantially** affecting services.

### Labor Costs

Although the total labor requirements are substantial, this cooperative hired an average of only about 28 hours per week of additional labor at a cost of about \$16.50. This is for a woman grader hired at \$5.00 for an eight-hour day and a high school boy who assists the grader on Saturdays. All of the grading is done on Saturday and Monday. Normally on Monday the volume of trade is lower than on Saturday. This allows one of the regular labor force to assist the grader. The additional labor for carton-ing, etc., is supplied by the regular labor force employed to handle the farm supply business.

The manager of this cooperative reports that all the present labor force would be required, with or without the egg marketing operation, to take care of the fluctuating pattern of store trade. Seasonal, day-to-day, and daily patterns of trade create stresses

on the labor force in some periods and at other times the labor supply is in excess of needs. Some rescheduling of work in the warehouse probably occurs in order that the eggs may be prepared for delivery at the scheduled time. However, the general condition of the warehouse is orderly and there is no evidence of neglect. Furthermore, delivery of eggs is combined with picking up needed supplies in the Knoxville warehouse. Both the bookkeeper and manager are salaried and, therefore, any added time required of them involves no direct cost.

In view of these facts, it may be assumed that the total labor cost attributable to the egg enterprise is \$16.50 per week or about 1.4 cents per dozen. However, if the volume of eggs handled is increased much beyond current levels it appears likely that more hired labor proportionately will be required. On the other hand, the use of a mechanical grader-candler would reduce requirements so that twice as many eggs could be handled with about the same labor force.

### Transportation Costs

Transportation is a cost item which will have varying importance depending on distance to markets and the over-all structure of the cooperative. The 100-mile round trip to Knoxville and five miles of travel delivering eggs (per delivery) would add about 1 cent per dozen to handling costs if figured at 10 cents per mile and if the entire cost were attributed to egg marketing. However, with only a few exceptions, the truck hauls a full load of fertilizer, feed and other supplies on the return trip. The manager estimates that the truck returns with less than a full load only five or six times per year. Figured at 10 cents per mile this adds about \$58 to total costs.<sup>11</sup>

About 20 special trips per year are made to Middlesboro, about 16 miles away, to deliver eggs. The manager's private automobile (driven by the bookkeeper, manager, or other employees that are not busy at the time) is used and a charge of 6 cents per mile or \$2.00 per trip is made, amounting to roughly \$40 per year.

<sup>11</sup>Variable operating costs of wholesale grocery delivery trucks with average rated capacity of about six tons, mostly delivering within the city of Baltimore, were about 8 cents per mile. Variable operating costs included gasoline, oil, tires, repairs and service. Fixed cost items such as interest, insurance and part of depreciation (obsolescence) are not related to degree of use and hence more use of the truck would not add to these fixed cost items. Part (perhaps one-half) of depreciation is associated with degree of use and may be considered a variable cost. This would bring total variable costs up to about 10.5 cents per mile. Since these figures were derived for fairly large trucks (about 6 tons capacity) loaded with four tons of merchandise (instead of 20 cases of eggs) and used within the city, it seems reasonable to conclude that the figure of 10 cents per mile is at least adequate and possibly excessive. See James Snitzler, *Improving the Truck Delivery Operations of a Wholesale Grocer*, Marketing Report 127, U. S. D. A., Agricultural Marketing Service, June 1956.

In total, then, additional transportation costs amount to only about \$98 or .16 cents per dozen. It should be emphasized that each cooperative must assess its own situation in determining additional transportation costs resulting from such a marketing service. These extremely low figures may be far from representative of other situations.

### Materials and Utilities

The only significant item of materials cost is egg cartons. Cartons cost 2.6 cents each or roughly \$21.00 per week (800 cartons per week for total sales of 1200 dozen).

Added electric power requirements for the refrigerator compressor increase utility bills, especially during the summer months. Based on a comparison of bills before and after the cooling room was installed, the average increase over a year would be about \$7 to \$8 per month or \$90 per year.

### Buildings, Equipment and Miscellaneous Costs

Present building space is quite ample for current needs. The space utilized by the cooling room and candling room apparently "costs" the cooperative very little in terms of efficiency in the supply business. Based on crude computations, it seems likely that if this space were utilized to store fertilizer in order to obtain pre-season price discounts the net saving after allowance for interest on capital tied up in fertilizer would not exceed \$20.

To show the importance of the adequacy of existing space, consider the annual costs involved. Indications are that warehouse space can be added (not including offices) at \$3.50 to \$4.00 per square foot.<sup>12</sup> With interest at 5 percent and depreciation at 3 percent, this would add \$54 to \$60 to annual costs if additional space were required.

In addition to the building, the candling and cooling rooms were installed in 1952 at a cost of \$906.71. This low cost was possible because almost all of the labor was provided by regular personnel. At present price levels this cost would be somewhat higher. But with over-all depreciation at 6 percent, and 5 percent interest on investment, roughly \$100 is added to annual costs. Repairs are estimated at an average of \$30.00 per year.

<sup>12</sup>In 1951 Claiborne Producers built their warehouse including a 60' by 30' pine-panelled sales room, indoor toilets, and office space for the Farm Bureau (20' x 30') at a cost of \$4.36 per square foot.

Increases in local taxes due to additional facilities are negligible, and cost of additional office supplies, egg cases, etc., are small. The manager estimates that an additional \$60 would cover these items. A \$25 license to handle eggs is the only other major cost item.

### Total Costs

The cost items cited are detailed and summarized in Table 3. Total costs attributable to egg marketing amount to about \$2,331 or 3.9 cents per dozen eggs handled for patrons.

Table 3—*Computed Costs Attributable to Egg Marketing Operations, Claiborne Producers Cooperative, Year of September 1955-August 1956*

	Annual Cost (Dollars)	Cost Per Dozen (Cents)
1. Additional labor .....	\$ 858.00	1.43
2. Additional transportation .....	98.00	.16
3. Additional utilities .....	90.00	.15
4. Egg cartons (40,000 @ 2.6 cents) .....	1040.00	1.74 <sup>1</sup>
5. Building space and equipment:		
Depreciation and interest on cooling room, compressor and candling room @ 11 percent .....	\$100.00	
Added repairs .....	30.00	
Value of warehouse space used <sup>2</sup> .....	20.00	
	\$ 150.00	.25
6. Miscellaneous (licenses, taxes, office supplies, etc.) .....	85.00	.14
	\$2331.00	3.88

<sup>1</sup>Only about 40,000 dozen of the 59,840 dozen eggs handled for patrons were sold in cartons. Hence, the average cost of cartons for all eggs handled is less than the cost per carton.

<sup>2</sup>Approximate net value of using the warehouse space to store fertilizer in order to obtain pre-season quantity discounts.

Although total costs amount to about 3.9 cents per dozen, it is important to note that about 9,450 dozen eggs were purchased from wholesalers to fill standing orders in slack periods. This was done in order to keep a market open for the patrons' eggs. All costs of handling these eggs were attributed to eggs handled for patrons in the previous computations. On this 9,450 dozen the cooperative made a gross margin of about \$142 which must be deducted from the costs of handling customers' eggs. This reduced the true total cost to \$2,189 or 3.65 cents per dozen.

### Margins in Relation to Costs

An adequate margin in a cooperative is one which covers the cost of the services rendered. Table 4 shows the computed prices paid to farmers for eggs and prices received for eggs for the period studied. However, since almost all of the eggs purchased from wholesalers were sold to retail outlets, the average price received for eggs handled for patrons was somewhat less than this. If 9,450 dozen at the average price of 47.7 cents are deducted from the sales to stores and individuals the average price for patrons' eggs is estimated at 45.0 cents. Thus, the average margin was approximately 2.5 cents per dozen (45.0 minus 42.5).

Table 4—*Purchases and Disposition of Eggs by Claiborne Producers Cooperative, Quantity and Value, by Source, Year of August 23, 1955 to August 22, 1956*

	Receipts of Sales		
	(Dozens)	(Dollars)	Price Per Dozen
Purchased from patrons .....	59,840	\$25,474	42.6
Purchased from wholesalers for resale .....	9,450	4,386	46.4
<b>Total</b> .....	<b>69,290</b>	<b>29,860</b>	<b>43.1</b>
Sales to stores & individuals .....	43,880	\$20,916	47.7
Wholesale .....	13,895	5,848	42.1
Miscellaneous sales <sup>1</sup> .....	7,700	3,090	40.1
Breakage and unmarketable .....	250 <sup>2</sup>	—	—
	<b>65,725</b>	<b>\$29,834</b>	<b>45.4</b>
Not accounted for .....	3,565 <sup>3</sup>	\$ 1,619 <sup>3</sup>	45.4 <sup>3</sup>

<sup>1</sup>Includes recorded sales to individuals and customers not buying regularly, 1534 estimated handled under petty cash account and an estimated 1500 dozen cracked eggs sold to local restaurants @ 25c.

<sup>2</sup>Estimated on basis of 5 dozen per week.

<sup>3</sup>Price assumed to be average for the year. This discrepancy presumably was due to lost receipts or inclusion with other sources of revenue and not specifically labeled on the tickets.

Comparing this figure with the cost figure of 3.65 cents, it would appear that the price to farmers was too high (by about 1.15 cents per dozen) to reflect the added costs which this operation entails. The egg marketing operation appears to be "subsidized" by the supply business to the extent of about \$690 per year.

This apparent subsidization could be corrected quite easily by reducing the price to farmers. The manager reports that the price is now about 3 to 5 cents per dozen above prices paid at



Table 5—*Comparative Supply Sales to Patrons Marketing Eggs and Those Not Marketing Eggs Before and After Egg Marketing Operations Were Begun, by 1955 Sales Volume, Claiborne Producers Incorporated*

1955 Sales	Patrons Marketing Eggs				Patrons Not Marketing Eggs			
	No.	Av. Total Sales 1954-55 <sup>1</sup>	Av. Total Sales 1950-1951 <sup>1</sup>	Percent Increase or Decrease <sup>2</sup>	No.	Av. Total Sales 1954-55 <sup>3</sup>	Av. Total Sales 1950-51 <sup>1</sup>	Percent Increase or Decrease <sup>2</sup>
\$ 0 - \$ 24 .....	13	494	892	- 45	38	822	1170	- 27
\$ 25 - \$ 49 .....	8	331	312	+ 6	12	243	150	+ 62
\$ 50 - \$ 99 .....	5	920	639	+ 44	12	705	415	+ 70
\$100 - \$299 .....	7	1979	2389	- 17	15	2397	1435	+ 67
\$300 and over .....	35	27898	10973	+154	9	3675	1264	+191
Total .....	68	31622	15205	+108	86	7841	4434	+ 77

<sup>1</sup>Total sales to all patrons in both years divided by 2.

<sup>2</sup>Difference between 1950-51 and 1954-55 divided by 1950-51.

other outlets in the county. Moreover, the cooperative has apparently served as a price leader. The price paid by competing firms during the first few months that the cooperative marketed eggs was, at times, as much as 10 to 12 cents below the co-op price. Thus, a significant service could be provided while fully covering costs.

But before accepting the conclusion that there is an inadequate margin, one other factor should be considered, namely, the effect of this service on the volume of sales and economies of larger-scale operations. Present policies and the initial attempt at egg marketing were based on the idea that by marketing eggs business volume in farm supplies would be increased. Therefore, it is important to know whether the egg marketing service did increase farm supply sales.

A comparison was made of the supply sales to 68 patrons who marketed eggs and 86 who had not sold eggs through the cooperative. The 68 egg patrons used in this comparison comprised all those who had marketed eggs in one of five selected one-week periods throughout the 12-month period August 23, 1955, to August 23, 1956. The patrons who had not marketed eggs comprised a random sample of 1955 patrons.

A comparison was made of the sales of supplies to each of these two groups for the year 1950 and 1951 before eggs were marketed and 1954 and 1955. For every 1955 sales volume class the percentage increase was smaller for the egg patrons than for other patrons (see Table 5). The average increase in supply purchases by all egg patrons was greater than for patrons not marketing eggs. But this was due to the larger average volume of 1955 sales among the egg patrons. Those who had large 1955 supply purchases also increased their supply purchases by a larger percentage than the others.

Some cases probably can be cited of individual patrons' purchasing supplies because they were able to market their eggs through the cooperative, but there is no evidence to support the belief that this is a significant factor in the total farm supplies business.

### **POSSIBILITIES FOR DECREASING COSTS OR RAISING RESALE PRICES**

This discussion mainly concerns the way egg marketing operations are now conducted by this cooperative. There are, of course, other methods which can be employed.

## Mechanized Grading

The automatic grader-candler described earlier would reduce labor requirements for the candling and grading operation to one-third of present requirements.

The present extra labor hired for the egg operation is used exclusively in grading and candling. All grading and candling is done on Saturdays and Mondays. Because of the heavy volume of trade on Saturday an extra person is hired to assist the woman who candles and grades the eggs. However, if the grading machine were used, all grading could be done on Saturday. In fact, on the average a full 8-hour day would not be required. Hence, labor costs would be equal to no more than \$9 per week or \$468 per year, a saving of \$390. This saving of \$390 would nearly pay for the grading machine (which costs about \$500) in a single year.

One other advantage of the mechanical grader is that it would facilitate paying customers on the basis of grade and quality. This, in turn, would tend to eliminate losses on cracked, broken and spoiled eggs by encouraging more careful handling. (Cracked eggs alone involve about \$300 per year in lost revenue.) Throwouts cost the cooperative an additional \$100 or more. By rapid grading and candling of small lots, immediate payment could be made while losses could be controlled. Commonly, in other areas case-lot quantities are marked, graded later, and a check is mailed with an itemized statement of the number of eggs in each grade and their respective prices.<sup>13</sup>

All factors considered, it seems probable that a net saving of 1 cent per dozen could be achieved by use of the machine even after allowance for repairs and depreciation.

## Retail Versus Wholesale Outlets

The price of eggs sold to retail outlets was higher than the price obtained on the wholesale market by about 5.6 cents.<sup>14</sup> Is this enough to justify the added costs involved in marketing these eggs direct to retail outlets?

Most of the eggs sold at retail outlets are sold in cartons. Cracked eggs and pullet eggs are the main exceptions. Thus,

<sup>13</sup>Since the eggs are sold under the cooperative label, it might be wise to pay a small premium for eggs from confined flocks. Eggs from confined flocks are more uniform in color and flavor than those from flocks which scavenge around the farmstead.

<sup>14</sup>Whether a larger proportion of the eggs sold at wholesale were small and medium or brown eggs is not clear from available data. But this proportion would have to be very different to alter the conclusion of this analysis. In any event another co-op considering this problem should compare the prices obtainable at wholesale and retail outlets on the basis of comparable grade and color.

the extra costs involved are (1) the cost of cartons, (2) labor to carton and deliver the eggs, and (3) extra truck mileage associated with delivery.

Cartons cost 2.6 cents each. On the other hand, labor costs, if the eggs were sold in bulk lot, would not be decreased unless the regular work force time so released were used to substitute for the labor of the hired grader. If so, the labor saving might amount to as much as 6 hours per week (.5 minutes per dozen).<sup>15</sup> Labor costs might accordingly be reduced by \$185 per year or .3 cents per dozen if the eggs were not cartoned. For reasons noted heretofore, this substitution of other labor for the hired grader may be difficult or impossible.

Since almost all of the extra truck travel expense is due to the necessity of delivering eggs twice each week to retail outlets, about .16 cents could be saved on this item if eggs were sold at wholesale (see Table 3).

Total costs added by selling the eggs at retail outlets instead of wholesale amount to 2.8 to 3.1 cents per dozen. The actual difference between retail outlet prices and wholesale prices is greater than this. The difference in price is over 2 cents per dozen more than the costs added.

### **Collective Distribution for Locals by the Regional Association**

This cooperative along with a majority of other Tennessee farm supply cooperatives is affiliated with a federated regional (State) association. The manager believes that several advantages could be gained if the parent organization would handle the eggs at the distribution level for this and other associations which contemplate a similar egg marketing operation. That is, if a cold storage facility were maintained in Knoxville and other major urban markets, advantages might be gained that the locals could not gain acting individually. It would also be possible for a few locals to form their own central marketing association independently and accomplish the same objectives.

One of the advantages of such an arrangement would be the ability to tap markets which require large volume. A chain grocery in the Knoxville area agreed to handle Claiborne County eggs on favorable terms if they could supply all of their stores. Present volume is not this large. On the other hand, it might be

<sup>15</sup>Labor for delivery is used on a different day than when the grading is done and, therefore, cannot be used in grading even if released from its present use.

possible to saturate the local retail trade if business volume in eggs increased sufficiently. In this case it would be necessary to cut prices at retail stores or to sell the excess eggs at wholesale at reduced prices.

Another factor is the possibility that temporary deficits and surpluses can be smoothed out by (1) collective storage for short periods and (2) offsetting fluctuations in the supply delivered by the local association. If this type of business grows it may be possible to shift egg supplies back and forth between markets to even out sales and supply variations.

If it becomes necessary to buy eggs from wholesale sources to fill orders or to dispose of seasonal surpluses over sales, it seems likely that the larger scale organization could bargain more effectively, and base decisions on better information than that now available to managers of local associations.

Finally, some cooperatives cannot combine marketing trips with back-hauls of supplies effectively. If adequate refrigerated storage is available, a central marketing facility might eliminate much of the truck transportation expense, since less frequent marketing trips could be made.

## SUMMARY AND CONCLUSIONS

Due to the small volume of egg production in Tennessee relative to its geographic area, large-scale specialized egg marketing facilities are lacking in most rural areas. Local non-specialized dealers are poorly equipped to handle marketing functions. Cooperatives are a means by which farmers often have introduced improvements in marketing facilities and services. But cooperatives have been slow to move into the egg marketing field because potential volume of business is insufficient in most areas to allow efficient operation of specialized marketing associations.

The fact that a large proportion of Tennessee eggs are assembled by non-specialized outlets such as grocery and general stores, suggests that cooperatives may be able to serve this need by a similar approach. A combination of egg marketing with cooperative purchasing or other enterprises may, by more intensive use of trucks, labor, buildings, and other facilities, make cooperative egg marketing feasible.

Cooperative egg marketing is feasible if, with expected volume of business, the present farm price plus the "true" cost of mar-

keting per dozen is less than the resale value for comparable grade, color and quantity. True costs include (1) the additional expenses required to provide the service and (2) the value of alternative services to which labor and other resources would be applied if the egg marketing service were not instituted. True costs will vary depending, among other things, on (1) presently available facilities, (2) seasonal, day-to-day and daily fluctuations in labor requirements, (3) prices of labor, utilities and other additional resources that are required, (4) the nature and location of the market, and (5) ability to combine marketing trips with back-hauls of fertilizer and other supplies. The resale value of eggs will depend on (1) the supply of locally produced eggs, (2) preferences of consumers for locally produced eggs, (3) buying and merchandising policies of retail and wholesale establishments, (4) the established reputation of the cooperative brand name or label, and other economic factors.

Under the existing system of Claiborne Producers Cooperative labor requirements are relatively large, about 2.8 to 3.2 man-minutes per dozen, or 56-64 man-hours for a typical week in which 800 dozen cartoned and 400 dozen uncartoned eggs are sold. However, since regular labor can be used in slack periods without substantial loss of service in other departments, only about 28 hours per week of additional hired labor is required. Similarly, since frequent trips to Knoxville are required to obtain farm supplies, increases in truck transportation costs are relatively small.

Total added costs resulting from the egg marketing operation amount to only about 3.65 cents per dozen (including cartons for two-thirds of the eggs) despite the fact that weekly volume is small (about 1200 dozen). If a similar volume were handled by a specialized marketing facility the salary of a single employee would alone exceed this value if he were paid \$7.50 per day.

Whether this type of service is feasible for any given cooperative depends on resources and market channels available to it. But for a small volume operation such as this, it is evident that greater possibilities of success exist if operated as a subsidiary enterprise of a farm supply business than as a specialized cooperative business.

Present indications are that this cooperative is paying producers too high a price in view of costs and resale value of eggs. No significant increase in supply sales and associated economies

of larger scale operation can be attributed to the egg business. Therefore, if the experience of this cooperative is typical, the egg marketing operation must "stand on its own feet" financially.

Significant improvements could have been made by the cooperative in marketing eggs in Claiborne County while fully covering all added costs. Moreover, costs could be reduced and/or returns to producers could be increased by (1) using a mechanical grader, (2) paying producers on the basis of grade, and (3) collective storage and distribution for several locals by the regional association.

Marketing the eggs through retail outlets has been highly profitable for Claiborne producers. Returns to farmers would be reduced if all eggs were sold to wholesale dealers.