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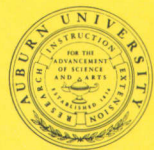
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Procedures for Calculating
PRODUCER QUOTAS
AND PRICES FOR
Grade A Milk in Alabama

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This report was developed to explain and illustrate the procedures used in Alabama to calculate quotas and to allocate producer supplies during a pay period. These procedures are now in use by plants throughout the State. Producers who have specific questions regarding their milk sales, pricing, allocation of milk by classes, or other questions should contact their receiving plant or the Executive Secretary of the Alabama Milk Control Board.

Procedures for Calculating Producer Quotas and Prices for Grade A Milk in Alabama*

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AN IMPORTANT PROBLEM in Alabama's fluid milk industry is that of adjusting production of milk to market demand for fluid products at prices satisfactory to producers, handlers, and consumers. It is desirable to have sufficient supplies to meet fluid uses, plus a reserve of milk adequate to cover daily variations in sales. To adjust production to the demand for fluid uses, the Alabama Milk Control Law gives the Alabama Milk Control Board authority to establish a base-surplus system. The Board has the power to establish uniform rules and regulations for the apportionment of the quota of base milk among producers.

Many base or quota plans are in operation in fluid milk markets throughout the country. Although different procedures are used in determining bases and paying producers, all of the plans have similar objectives. The main objective is usually that of seasonally adjusting the supply of fluid milk to the demand for fluid milk products at satisfactory prices and with a minimum seasonal surplus. Some base plans designed for specific purposes may have additional objectives.

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PURPOSE and METHOD

Two different procedures are currently being used to calculate quotas or bases for fluid milk in Alabama. These are the "plant usage" method and the "alternative quota plan." Until recently, almost all fluid milk plants in Alabama regulated by the Milk Control Board have used the "plant usage" method of determining producer bases or quotas. In 1961, the Board put into effect an order providing for an "alternative quota plan." On a trial basis, producers selling milk to three plants changed to the latter plan to determine quotas for the 1961-62 base-building period. A base under either plan is determined during the base-building period from September 1 through the last day of February. The new base is then in effect from March 1 through the last day of February of the following year. Producers of two additional plants have voted to change to the "alternative quota plan" starting September 1, 1962.

This report has the following objectives: (1) to explain and compare the procedures of determining quota by the "plant usage" method and the "alternative quota plan," and (2) to explain the allocation of producer shipments of milk into different class uses during a selected pay period.

To explain the calculation of quota and allocation of producer shipments in each class use, a hypothetical plant and its producers are used. The procedures used in working each example are based on official orders of the Alabama Milk Control Board. These procedures are currently in use by fluid milk plants throughout the State in allocating producer shipments in each class use and by the Board in determining quotas.

PROCEDURES of DETERMINING QUOTAS

"Plant Usage" Method

Under the "plant usage" method, each producer's quota is determined by the percentage that his deliveries of milk during the base-building period are of total producer deliveries to his plant. As an illustration of this method, assume there are four producers, A, B, C, and D, shipping milk to a given plant during the base-building period. An assumed set of quotas earned by each producer is shown in Table 1.

The quotas become effective at the end of the base-building period. Producer A, having shipped 120,000 pounds of milk or

TABLE 1. DETERMINATION OF QUOTAS BY THE "PLANT USAGE" METHOD

Producer	Total producer deliveries during base-building period	Quota for each producer
	<i>Pounds</i>	<i>Per cent</i>
A.....	120,000	15
B.....	160,000	20
C.....	200,000	25
D.....	320,000	40
TOTAL.....	800,000	100

15 per cent of the plant's producer receipts, is entitled to be paid Class I and II prices for an amount of deliveries equal to 15 per cent of the plant's sales of Class I and II milk products in the new period. Each producer has earned a quota based on his proportionate share of total producer receipts during the base-building period.

The butterfat content of the milk or Class utilization of producer milk is not used in determining quota under the "plant usage" method in effect in Alabama markets. Also, under this procedure there is no carryover of quota from one base-building period to the next.

"Alternative Quota Plan"

Under the "alternative quota plan," the quantity of a producer's milk delivered during the base-building period to be used in calculating quota cannot exceed 115 per cent of his share of Class I and II sales by the plant during the same period. **For one or more pay periods during the base-building months, a producer may deliver less than 115 per cent of his share of Class I and II sales and not lose quota if he makes up the amount before the end of the base-building period.** Assume there are four producers, A, B, C, and D, shipping milk to the plant, Table 2. Quotas currently held by each producer are shown in line 1. In the period illustrated, total producer receipts are 858,000 pounds, of which 660,000 pounds are used in Class I and 180,000 pounds in Class II. This leaves 18,000 pounds for Class III, surplus milk.

In this example, Producer A, with a 15 per cent quota, is entitled to 99,000 pounds of Class I and 27,000 pounds of Class II, a total of 126,000 pounds during the base-building period. Class I and II eligibility, line 4, is then multiplied by 115 per cent to obtain a maximum volume of milk that may be used in determining the new quota, line 5. The amounts of shipments

TABLE 2. DETERMINATION OF QUOTAS BY THE "ALTERNATIVE QUOTA PLAN"

Line	Item	Unit	Producer				Total
			A	B	C	D	
1	Current quota	pct.	15	20	25	40	100
2	Class I eligibility	lb.	99,000	132,000	165,000	264,000	660,000
3	Class II eligibility	lb.	27,000	36,000	45,000	72,000	180,000
4	Total Class I and II eligibility	lb.	126,000	168,000	210,000	336,000	840,000
5	115 per cent of total eligibility	lb.	144,900	193,200	241,500	386,400	966,000
6	Total producer deliveries	lb.	168,000	204,000	150,000	336,000	858,000
7	Volume used in calculating new quota	lb.	144,900	193,200	150,000	336,000	824,100
8	New quota	pct.	17.58	23.45	18.20	40.77	100.00

by each producer used in calculating quota under this plan, line 7, are determined from columns 5 and 6. If a producer ships more than 115 per cent of his Class I and II eligibility, as in the case of Producer A, the 115 per cent eligibility, 144,900 pounds, is used and not total shipments. If the producer ships less than 115 per cent of his Class I and II eligibility, as in the case of Producers C and D, the total shipments of that producer are used in calculating the new quota.

When the new quotas, line 8, are compared with the current quotas, line 1, it is noted that Producers A, B, and D gained and Producer C lost quota.

To be adequately supplied, a plant needs a sufficient supply of milk from regular producers in the period of low production to take care of its fluid needs and to allow an operating reserve. An operating reserve is necessary to meet day-to-day fluctuations in the plant's sales of fluid milk products. This reserve amount is generally considered to be about 15 per cent above the plant's fluid sales. In Alabama, this "rule of thumb" was accepted by producers and plants as a starting point in the development of the "alternative quota plan." However, this percentage might be changed if experience of the plants and producers using the plan show the need for adjustment.

COMPARISON of QUOTAS DETERMINED under EACH PLAN

Using the same data as in the foregoing examples, a comparison can be made of each producer's new quota calculated by both procedures, Table 3.

Under the "plant usage" method, Producer A earns a quota of 19.58 per cent. The new quota for A is 19.58 per cent simply because he shipped that percentage of total producer supplies during the base-building period. Using the "alternative quota plan," A earns a quota of 17.58 per cent, which is smaller than the new quota calculated by the "plant usage" method. In the latter case, A is able to at least maintain a 15 per cent quota because he shipped 115 per cent of his Class I and II eligibility. Actually, his deliveries were 133 per cent of Class I and II eligibility. The excess above 115 per cent is of no value to him in enlarging his quota (calculated by the "alternative plan"), although during a given pay period part of the excess may have been utilized and paid for as Class I or II milk. Producer A gains quota because all producers did not ship at least 115 per cent of their Class I and II eligibility (Producer C shipped 71 per cent of his eligibility and D shipped 100 per cent).

Producer B increased quota when calculated by either procedure. The increase was slightly larger when using the "plant usage" method. This producer shipped 121 per cent of his Class I and II entitlement.

Producer C lost quota when determined by either procedure. However, the loss was smaller under the "alternative quota plan."

Producer D did not lose quota under the "alternative quota plan" in this example, even though his shipments were less than 115 per cent of his eligibility. He maintained quota, gaining 0.77 per cent because Producer C shipped a relatively low percentage

TABLE 3. COMPARISON OF PRODUCER QUOTAS DETERMINED BY THE "PLANT USAGE" METHOD AND THE "ALTERNATIVE QUOTA PLAN"

Producer	Total deliveries during base-building period	Current quota	New quota	
			"Plant usage"	"Alternative quota plan"
	<i>Pounds</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
A.....	168,000	15	19.58	17.58
B.....	204,000	20	23.78	23.45
C.....	150,000	25	17.48	18.20
D.....	336,000	40	39.16	40.77
TOTAL.....	858,000	100	100.00	100.00

of his eligibility. If C had shipped 115 per cent of Class I and II eligibility and D the same percentage, D would have lost quota.

Marketing data show that producer deliveries to fluid milk plants in Alabama have increased considerably in recent years. During the past 5 years, production of Grade A milk for fluid use has increased approximately 40 per cent. During the same period, sales of fluid products increased 25 per cent. The excess milk has been utilized in non-fluid products that sold at lower prices, thus resulting in lower blend prices.

In some cases, assignment of a base to individual producers on the basis of deliveries ("plant usage") has created an acute competitive race for base by many producers. In an attempt to gain additional quota and improve their income position, some producers have rapidly expanded production, such as Producer A in the illustration. On the other hand, many dairymen had already reached a level they desired to maintain, such as Producer D. To help relieve this problem, the Alabama Milk Control Board issued an order in 1961 providing for the "alternative quota plan" discussed, whereby quotas could be assigned on the basis of sales of fluid milk products.

What are some of the implications of these two quota plans to Alabama dairymen? When total producer shipments are increasing, as in Alabama, an individual producer must continue to increase production at a rate equal to the average of other producer shippers to his plant to hold the same percentage quota under the "plant usage" method. To expand his quota under the "plant usage" method, a producer must increase shipments during the base-building period at a rate greater than the average rate for all producers. The producer whose rate of increase in production is less than the average increase for all producers will lose quota under the "plant usage" method. Finally, the producer who has reached a level of production he desires to maintain without further increases in deliveries will lose quota under this plan if total producer shipments are increasing.

The "alternative quota plan" as used in Alabama eliminates some of the features of the "plant usage" method of calculating quotas. A producer who is rapidly expanding production cannot gain quota simply because of a large increase in milk deliveries. He can gain only because other producers do not fulfill their quota eligibility. In the example shown, Producers A and B gained quota using this procedure because of the failure of

other producers to ship 115 per cent of their Class I and II eligibility. As this plan is currently being used by plants in Alabama, a producer can at least maintain his present percentage quota in his plant's sales if he ships 115 per cent of this amount regardless of the actions of other producers. However, a producer who ships less than the 115 per cent requirement may lose quota, depending on the shipments of other producers during the base-building period.

A quota calculated by either procedure entitles a producer to a specified percentage of his plant's sales of Class I and II products. A quota does not ensure the producer that a definite volume will be purchased at the Class I or II price. This volume depends on the plant's sales of fluid products. Sales of fluid products by a plant are usually rather stable and follow a predictable seasonal pattern. Because of this, a producer is able to make a reasonable estimate of the expected volume of Class I and II sales that his percentage quota entitles him to receive.

Any change in total sales of fluid products by a plant is proportionately shared by each producer shipping to the plant. For example, an increase in sales by the plant means that each producer will proportionately share the increase without any change in quota. Of course, a comparison of percentage quotas held by producers shipping to different plants is meaningless until converted to a volume basis.

The following section illustrates the application of quotas in the allocation of producer receipts for a pay period.

ALLOCATION of PRODUCER RECEIPTS for A SELECTED PAY PERIOD

During a selected pay period, milk sold by the four producers in the examples described may be assumed to be allocated as shown in Tables 4 and 5. As the quota plans are interpreted, producer receipts for a pay period are allocated in the same way in plants using either procedure.

In the pay period shown, total producer receipts were 143,000 pounds, of which 110,000 pounds was used in Class I, Table 4. Allocation of the milk in Classes I and II is based on the producers' quotas earned in the base-building period, column 2. Producer A was entitled to 15 per cent of the Class I sales or 16,500 pounds, column 3. In this period, Producer A shipped 28,000 pounds, an amount in excess of his Class I entitlement.

TABLE 4. ALLOCATION OF PRODUCER RECEIPTS IN CLASS I UTILIZATION FOR A SELECTED PAY PERIOD

Producer	Milk delivered	Quota	Volume entitled to receive Class I price	Unused Class I	Distribution of unused Class I	Total Class I
	<i>Pounds</i>	<i>Per cent</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
<i>Column no.</i>	(1)	(2)	(3)	(4)	(5)	(6)
A.....	28,000	15	16,500	0	500	17,000
B.....	34,000	20	22,000	0	667	22,667
C.....	25,000	25	27,500	2,500	0	25,000
D.....	56,000	40	44,000	0	1,333	45,333
TOTAL.....	143,000	100	110,000	2,500	2,500	110,000

Producers B and D also shipped milk in excess of their Class I entitlement. Producer C, however, was entitled to receive the Class I price for 27,500 pounds of milk, but shipped only 25,000. Hence, he received the Class I price for all of his milk. Since Producer C had 2,500 pounds of unused Class I, column 4, each of the producers with supplies in excess of their Class I entitlement received a proportionate share of the unused base, column 5. Total Class I allocated to each producer is shown in column 6.

Allocation of producer supplies in Class II is determined in the same manner as for Class I, Table 5. Plant utilization of milk in Class II products was assumed to be 30,000 pounds. Again, each producer was entitled to receive a share of Class II utilization based on his quota as shown in Table 4. Producer A was entitled to receive 15 per cent of Class II or 4,500 pounds, Table 5, column 2. As all of Producer C's milk was allocated to Class I, this producer did not have any Class II milk, although he was eligible to ship 7,500 pounds. Producer D was entitled to 40

TABLE 5. ALLOCATION OF PRODUCER RECEIPTS IN CLASS II UTILIZATION AND SURPLUS FOR A SELECTED PAY PERIOD

Producer	Volume remaining for lower class uses	Volume entitled to receive Class II price	Unused Class II	Distribution of unused Class II	Total Class II	Volume remaining for Class III
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
<i>Column no.</i>	(1)	(2)	(3)	(4)	(5)	(6)
A.....	11,000	4,500	0	3,786	8,286	2,714
B.....	11,333	6,000	0	5,047	11,047	286
C.....	0	7,500	7,500	0	0	0
D.....	10,667	12,000	1,333	0	10,667	0
TOTAL.....	33,000	30,000	8,833	8,833	30,000	3,000

TABLE 6. DETERMINATION OF VALUE OF PRODUCER MILK BY CLASS USES, TOTAL VALUE, AND BLEND PRICES FOR A SELECTED PAY PERIOD

Item	Unit	Producer				Total
		A	B	C	D	
Class I (\$6.56 cwt.)						
Volume	lb.	17,000	22,667	25,000	45,333	110,000
Value	dol.	1,115.20	1,486.96	1,640.00	2,973.84	7,216.00
Class II (\$4.00 cwt.)						
Volume	lb.	8,286	11,047	0	10,667	30,000
Value	dol.	331.44	441.88	0	426.68	1,200.00
Class III (\$3.12 cwt.)						
Volume	lb.	2,714	286	0	0	3,000
Value	dol.	84.68	8.92	0	0	93.60
Total						
Volume	lb.	28,000	34,000	25,000	56,000	143,000
Value	dol.	1,531.32	1,937.76	1,640.00	3,400.52	8,509.60
Blend price	dol./cwt.	5.47	5.70	6.56	6.07	5.95

per cent of Class II or 12,000 pounds, but had only 10,667 pounds remaining for lower class use, column 1. Excess quota not used by Producers C and D was then proportionately shared by A and B, column 4. Total Class II is shown in column 5. Class III, or surplus milk, is the remaining quantity not allocated to Classes I and II, column 6.

Total value of the milk and average or blend price received by each producer is shown in Table 6. Prices for milk testing 4 per cent butterfat were assumed to be \$6.56 for Class I, \$4.00 for Class II, and \$3.12 for Class III. All milk was assumed to test 4 per cent butterfat. In the example, Producer A, who had the largest surplus, received the lowest blend price of \$5.47. Producer C, who did not ship enough milk to fulfill his Class I entitlement, was paid the Class I price for all of his milk. The blend price is thus a weighted average price received by each producer for his total shipments. It is weighted by the total value of milk allocated to each class divided by total shipments for the pay period.

Besides the three use classifications discussed, some plants in the State make additional uses of producer milk in government contract sales of packaged milk and interplant transfers of bulk milk. In appropriate orders, the Alabama Milk Control Board provides for the allocation and payment of producer supplies in these uses in a manner similar to the Classes illustrated. These uses, in effect, add additional classes of milk.

