AN ANALYSIS OF THE TULSA MILK-SHED UNDER THE FEDERAL MARKETING ORDER

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BY

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CHAPTER I.

INTRODUCTION

Purpose, Scope and Procedure

This study is primarily designed as an economic analysis of the effects of the Federal Milk Marketing Order on the marketing of fluid milk in the Tulsa, Oklahoma milk-shed. Since May, 1950, the effective date of the Federal Order, the government has played an increasing role in the pricing of fluid milk in the Tulsa area. As shown by various requests continuously being put forward for the government to strengthen, replace or modify present price determining methods, the regulatory program of pricing milk by the government seems to have gained popularity rapidly, not only in the Tulsa area, but also in many different markets throughout the United States. It is believed that over the past 3 years, governmental participation in pricing milk in Oklahoma has progressed far enough so as to form some basis for an appraisal of its pricing and regulatory effects. Because of this progress an examination can be made of one of its marketing areas. The Tulsa milk-shed was selected for a case study as an example of one of these markets operating under a Federal Order.

The basic information for this study was secured by personal interviews with individual producers, personnel of the Pure Milk Producers Co-Operative Association, conversations with the Market Administrator, and conversations with other concerns and individuals who had an interest in the dairy

industry. The producers interviewed for this study were selected from a total of approximately 1200. This total number of producers was reduced to 340 by the process of elimination of those producers who were not continuously in production for the past three years or longer. Following this process of elimination, a sample of 48 producers was selected at random to be interviewed. By use of the information secured, an analysis was made of the effects of the Federal Order on the marketing of fluid milk in this area.

An analysis was made of production, including trends in the size of the dairy enterprise, test variation, price stability, and shifts in the location of dairy producers on the basis of conditions before and after the effective date of the Federal Milk Marketing Order, in so far as could be determined from the data available and analyzed. The prevailing opinions of the producers interviewed as to the advantages and disadvantages of the Order are given, and are so noted as an opinion where there was not substantive evidence to prove or reject the belief.

CHAPTER II.

HISTORY

As compared to major dairy regions of the northeast and Great Lakes area of the United States, the dairy industry in the Tulsa area is still in its infancy. In direct relationship to the fast growth of its market outlet, the city of Tulsa, the dairy industry has been a continuously expanding industry. Tulsa has experienced tremendous growth in the past two decades, thus ever demanding an increasingly larger quantity of milk from the adjoining area. Perhaps the growth of the dairy industry can better be shown by comparision of the present situation with that which existed 15 or 16 years ago.

The first important change is in the number of producers. In 1938, there were 236 producers marketing milk in Tulsa[1]; in June of 1953, there were 857 grade 'A' producers on the Tulsa Market according to the Market Administrator's report. Thus, there has been a 263 percent increase in the number of producers on the market during the 16 year period.

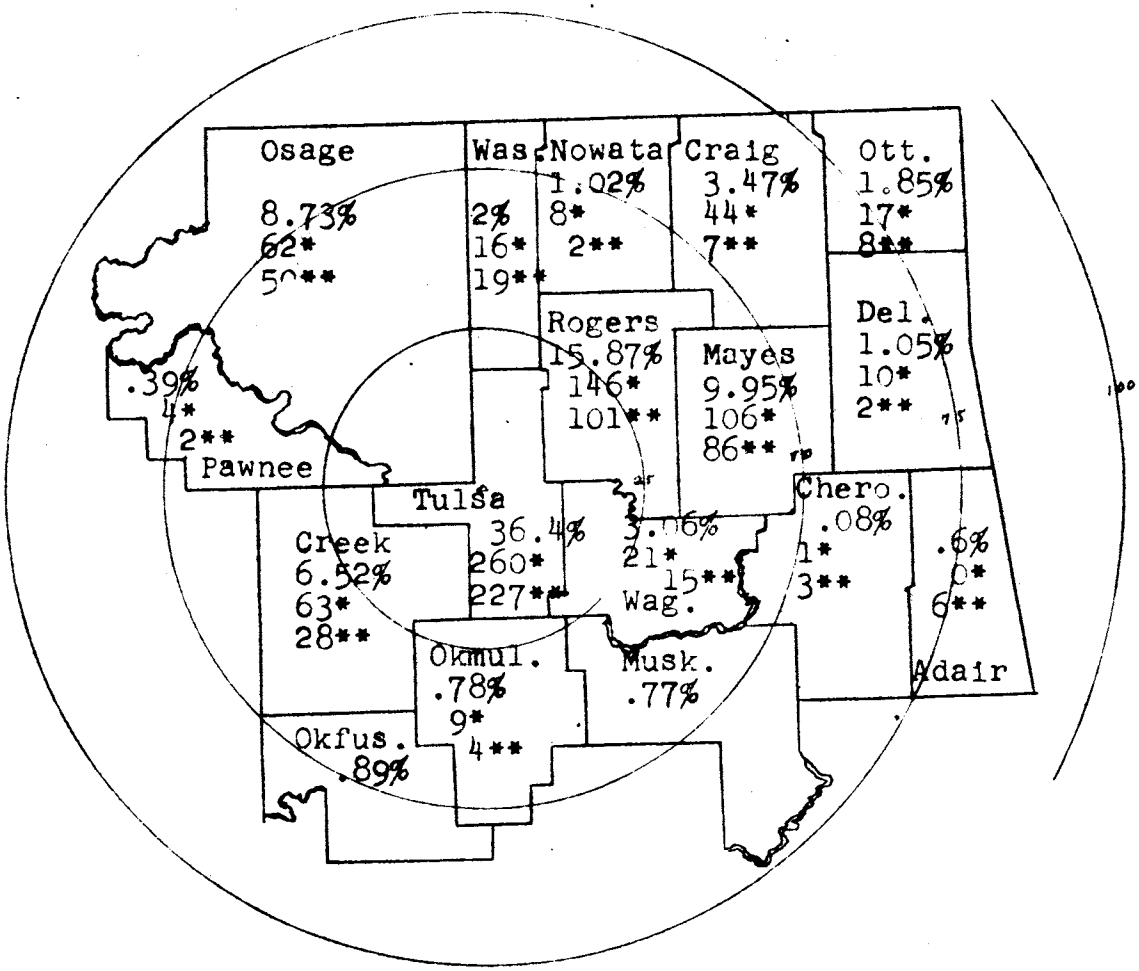
A second point of importance is the average size of the dairy herd. As was found in a study made in 1937, the average size of plant producer dairy herds in the Tulsa fluid milk supply area was 43 head. This compares with the present

[1]Herschel Wray Little, An Analysis of the Tulsa Milk Market (unpublished M.S. thesis, Department of Agricultural Economics, Oklahoma A. and M. College, 1939), p. 5.

average of 23 head per producer in the sample used.

A note of further interest is that in 1938, 90 percent of Tulsa's market milk supply area was within a 20 mile radius of the city. In contrast, in June of 1953, the area had expanded to the point that 13 surrounding counties, plus Tulsa county were supplying 90 percent of the fluid milk being marketed in the city. These counties and their percentages of the total market milk in Tulsa are given in Figure 1.

Figure 1. Counties Comprising the Major Proportion of the Tulsa Milk-Shed, Percentage of the Total Market Milk Furnished and Number of Grade 'A' Producers



Source: Marketing Administrators Bulletin, Vol. 4, No. 2, Tulsa, Oklahoma Milk Marketing Area Federal Order No. 6.

* Number of producers in 1953.
** Number of producers in 1949.

CHAPTER III.

PRODUCTION

Characteristics

The greater concentration of dairy farms lies to the north and east of Tulsa, bounded by the Arkansas River on the south and a line extended almost due north from the city. This region is more adapted to dairy farming than areas lying in other directions. The topography ranges from prairie and slightly rolling terrain to rather rough, hilly regions in the extreme northeast. The farms of the producers interviewed were of the family type in general, ranging in size from 80 to 320 acres with the necessary buildings and facilities. The major proportion of labor was furnished by the operator and his family. Herd replacement was maintained from his own stock, and a relatively large percentage of feed was grown when possible. Most of these farms were highly specialized as a result of the perishable nature of milk and special equipment was necessary. Because of rigid sanitary measures imposed by the Health Department regarding the production of grade 'A' milk, extreme care and caution must be maintained at all times. This leads to a high capital investment for the average grade 'A' milk producer.

Most Important Enterprise. It was determined that on 81.6 percent of the farms, dairying was classed by the individuals interviewed as being the most important enterprise on the farm. Most of the other farms were classed as a

combination of beef and dairy with beef production contributing the major portion of the farm income.

Length of Time in Production. Producers varied greatly as to the length of time they had been in the dairy business. In no case were producers used in this study who commenced production after the Order became effective. It was found from the sample that producers varied in length of time in the dairy business from 4 to 40 plus years. The turnover of producers was relatively fast in this particular area. Of those interviewed, 35 percent had been in production between 5 and 9 years, 30 percent over 9 years, and approximately 35 percent had been in production from 4 and 5 years. If the sample is characteristic of the entire market, 70 percent of the producers in the area have been in production less than 10 years. They would furnish 282,637 pounds of the 403,768 pounds of the daily producer receipts in the Tulsa market on the basis of the market average production per producer.

Herd Size. The size of the dairy enterprise has shown very little change for the 5 year period of 1949 to 1953, either in average size or the number of herds in particular class intervals. The average size herd of the sample producers was 22.5 head in 1949, and 21.5 in 1953: a decrease of 1 cow over the five year period or a decrease of 1.08 cows from the average for the 5 year total. (Table 1).

This slight decrease which has occurred in herd size might well have been caused by redistribution of herds from one class interval to another, that is, a herd of 19 cows

going out of the market, could be replaced by a herd of 9 or vice versa. This could cause the aggregate herd size to go down even though each producer who stayed in the market actually increased his herd size slightly. The opposite situation could occur for increasing aggregate herd size.

Table 1. Percentages of the Total Sample Herds in Size Intervals 1949-1953.

Year	0-10	11-20	21-30	31-40	40-Over	Ave.Size
1949	5.0%	56.0%	20.5%	5.1%	12.8%	22.5
1950	7.5	52.5	20.0	7.5	12.5	23.0
1951	7.5	52.5	20.0	7.5	12.5	23.5
1952	7.8	46.2	28.1	7.8	10.2	22.4
1953	14.3	42.8	28.6	2.8	11.4	21.5

Source: Data acquired from the producers interviewed in the Tulsa, Oklahoma Milk-shed.

Annual Production. The average annual production per producer has been on a steady increase since 1949. The average annual production per producer for the entire market in 1952 increased 2,544 pounds over that of 1951. The average for 1951 was 142,116 pounds and the average for 1952 was 144,660 pounds. This increase in average production per producer is expected to continue until producers are fully adjusted to the present market setup. Breeding schedules are especially being rearranged on all farms whose producers were interviewed, so as to raise production during

the fall and winter months. The herd make-up is undergoing change in the direction of more total milk production, with less emphasis on butterfat content. These points will be discussed in more detail later in the chapter.

Minimum Price for Milk Production. An attempt was made to determine from the producers the minimum price at which they could produce milk. Regarding this minimum price, about 25 percent gave "no opinion" as an answer. Their reason for this no opinion answer was that they had not been in the dairy business sufficiently long to give an answer which they considered sound. General answers were given by the other 75 percent of the producers. On the basis of price intervals for the producer price of milk, 41 percent of all producers interviewed indicated that they could produce milk at a price of $4.76-5.25 per cwt. and 26 percent could produce milk at a price of $4.26-4.75. Two producers were found who said they could produce cheaper than this but that they would barely break even and could not remain in business for a long period of time at a price less than $4.25 per cwt. The major costs mentioned here were feed, labor, and hauling which will be discussed later.

Current Adjustment

Approximately two-thirds or 68 percent of the producers had adjusted their organization to the present cost-price relationships. Those who had not adjusted were progressing as rapidly as possible either in the acquisition of more land with emphasis on raising a larger percentage of feed or

changing the breeding schedule of the herd and/or introducing a beef type bull for the purpose of improving the calf crop for a better price on the veal market. Of the 32 percent who were not adjusted, 30 percent had changed either to a beef or dual purpose bull in the past year. Fifty-one percent of the producers owned mixed herds with Holsteins predominating over any other breed. The remaining 41 percent of the producers had herds composed of purebred stock, Jerseys, Guernseys, Holsteins, and milking Shorthorns. Present concentration seems to be on mixed herds for several reasons: first and most important being higher total milk production and trying to maintain near a 4 percent butterfat test; and second, use of beef type bulls with mixed herd for production of better calves and feeders for the market.

Alternative Enterprise

For the next best alternative enterprise, farms that could be converted to the raising of feed crops included 46 percent of the now present dairy farms. There were 30 percent with enough land who said that their alternative would be beef production. Either from the lack of land or capital, 22 percent had no alternative that would possibly afford them with an income high enough for them to remain on their present farms. One dairyman determined that swine production under his particular set-up was the alternative to switch to, and at the time of this interview he was in a process of change from dairying to swine production.

Response to Hypothetical Price Alternatives

Some doubt exists as to the extent of substitution by producers between beef and dairy in the Tulsa milk-shed area. In attempting to determine the probable magnitude of this substitution, producers were asked what their response would be under different price alternatives of the two products. Under the price relationships at the time, the combination of $16.00 beef and $5.00 milk appeared to represent the current situation. Consequently this was used as a base. Under this situation 75 percent of the sample producers were solely in milk production, 16 percent were in a combination of beef and milk production and 9 percent had gone completely over to beef production. The producers response to alternative sets of prices of beef and dairy represented departures from this base.

A word of explanation of the response of farmers to alternative prices is needed. (Table 2.) These answers are only estimates and/or opinions of some of the producers. It is extremely difficult to determine the exact breaking point at which they would change types of production. Also, some producers have recently changed from dairy to beef because of the influence of factors other than price. Although the change was made at a relatively low level of beef prices, it is not necessarily indicative of the past action of the dairy producers. In other words, most of the dairymen who are going into beef now or plan to do so in the near future have produced milk through periods of much higher beef prices, or

Table 2. Estimated Type of Production (Beef or Dairy) at Given Price Levels for 32 Producers (Percentage of Total)

Oklahoma Farm Price of Beef	Price of Milk $4.00	$5.00	$6.00
$14.00	M. 71.88 %	M. 75.00 %	M. 90.62 %
	P. 12.50 %	P. 16.62 %	P. 9.38 %
	B. 15.62 %	B. 9.38 %	B. 0.00 %
$16.50	M. 56.25 %	M. 75.00 %	M. 90.62 %
	P. 18.75 %	P. 16.62 %	P. 9.38 %
	B. 25.00 %	B. 9.38 %	B. 0.00 %
$20.00	M. 43.75 %	M. 65.62 %	M. 84.38 %
	P. 28.12 %	P. 18.75 %	P. 9.38 %
	B. 28.12 %	B. 15.62 %	B. 6.25 %
$25.00	M. 40.62 %	M. 56.25 %	M. 62.50 %
	P. 15.62 %	P. 25.00 %	P. 25.00 %
	B. 43.75 %	B. 18.75 %	B. 12.50 %

M.- Milk production.
P.- Partial change to beef production.
B.- Complete change to beef.

Source: Data acquired from the producers interviewed in the Tulsa, Oklahoma Milk-Shed.

at least when beef had a more apparent advantage price-wise. Therefore, recent changes from dairy production have been influenced, to some extent, by factors other than price.

For the purpose of this study, the producers interviewed were constantly reminded during the conversation to give answers as nearly as possible in accord with the different price combinations.

With a reduction in the prices of both milk and beef, milk from $5.00 to 4.00 per cwt., and beef $16.50 to 14.50 per cwt., it was found that the producers would increase their beef production at the expense of the dairy enterprise. (Table 2.) About 3 percent fewer farmers would be in milk production, while 6 percent more farmers would be in beef production. A part of this change to beef would come from more stress on beef in dual purpose herds. This movement from dairy in the direction of beef, though not in magnitude of change, holds true to the previous finding that only 5 percent of the producers answered that they could produce 'A' grade milk for less than $4.26 per cwt., and this was for a relatively short period of time.

This difference in magnitude appears to result in a contradiction. Only 5 percent of the producers could continue to sell milk at a price of $4.25 per cwt., or below, while 40 percent of the producers indicated that they would remain in milk production at a price of $4.00 for milk and $25.00 for beef. However, this is merely a difference in the point of view on the part of the producers. In the comparison, 5

percent of the producers indicated they were thinking of maintaining a certain income. On the other hand, the 40 percent reported in Table 2 would try to make the most out of their particular situations, but this would mean that incomes were fluctuating.

When the price of milk was changed from $5.00 to $6.00 per cwt. and beef was held at $14.50, there would be an opposite movement in production. In accord with this, 90.6 percent of the producers interviewed would produce only milk, and 9 percent would remain in a combination of milk and beef. None of the producers would remain primarily in beef production.

Producers would not drastically curtail milk production and move into beef production when the price was lowered from $5.00 to $4.00 per cwt. On the other hand, these producers would significantly expand milk production and decrease beef production when the price of milk was raised from $5.00 to $6.00 per cwt. The apparent reason for the difference seems to lie in the fact that there is a greater fixed cost per animal unit in the dairy industry than in the beef enterprise. Also, these farmers had made the fixed investment for dairy production. These specialized facilities which are required in milk production have little or no use in the production of beef. However, the opposite is not true. Most of the facilities used in the beef enterprise are common to dairy production or can generally be converted to dairy fairly quickly and at a low cost to the individual.

Producers' responses to other hypothetical price

alternatives were analyzed. By placing the price of milk at $4.00 and beef at $25.00 per cwt., it was found that only 40.6 percent of the dairymen would remain in milk production, 44 percent would change to beef completely and the remainder would adopt a diversified enterprise producing both beef and milk.

At the opposite extreme, with milk at $6.00 and beef at $14.50 per cwt., it was found that 90.6 percent of the dairy men used in this study would produce milk and the remaining 9.4 percent would be in partial milk production.

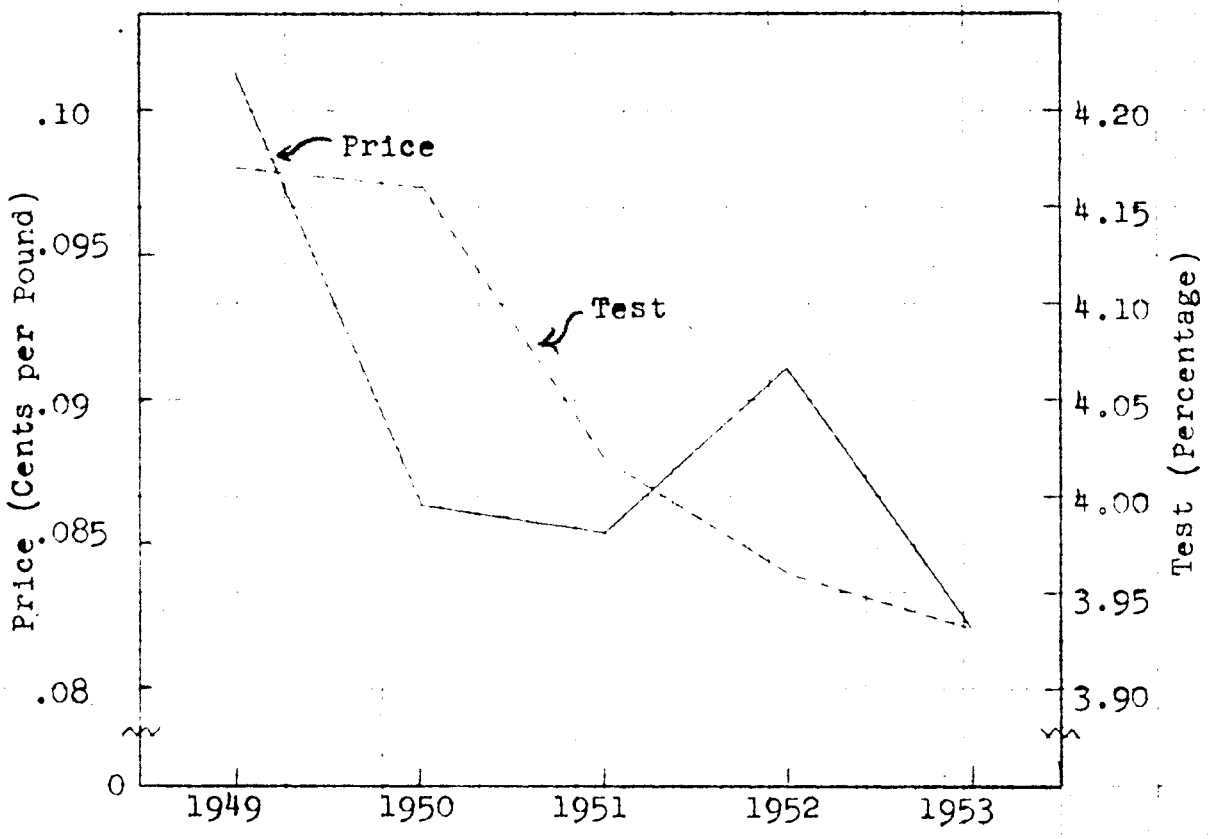
Table 2 is constructed in such a manner that comparisons of producer action under less extreme alternative prices can be analyzed. These results should provide some substantive evidence for the direction of changes in milk production which can be expected under various alternative prices. The answers depend, of course, on the fact that other things remain the same. If these other things do not remain the same then allowances must be made for such variations in the probable production changes.

Butterfat Tests and Price Differential

The price of milk received by the individual farmer depends not only on the basic price of 4.0 percent milk but also on the butterfat price differential for each one-tenth percent test variation. A decrease in this price differential should provide a stimulus for a decreased butterfat test.

Figure 2 shows the relatively long-time positive relationship which has existed between the butterfat price differential

Figure 2. Butterfat Tests and Price Differentials, Tulsa, Oklahoma 1949 - 1953



Source: Table 3 and Appendix Tables 6 and 7.

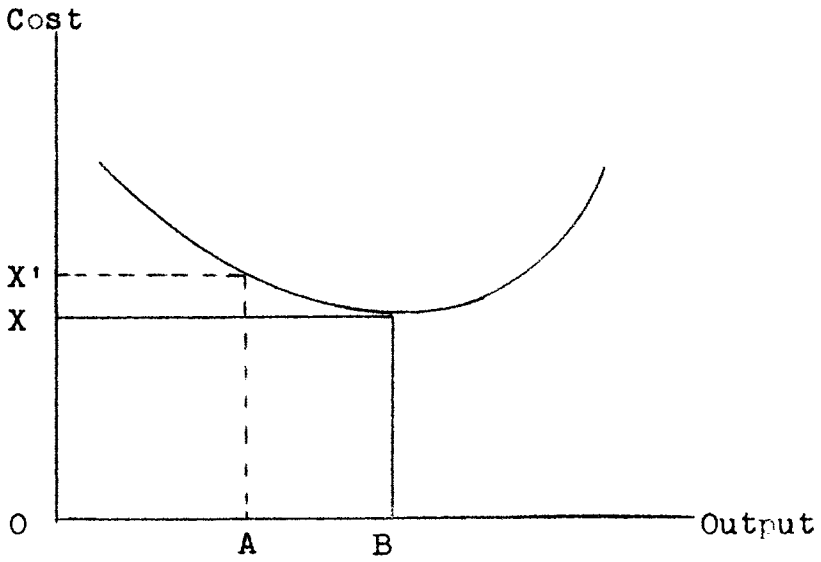
and the butterfat content of producer milk in the Tulsa milk-market. Producers response of lower test to a decreased butterfat price differential is of significant importance. Producers make this change in production in accord with the price differential as it increases or decreases. Because of the relatively long time it takes for producers to make changes in production, the changes in butterfat tests lag behind the changes in price differential by several months. Opinions of the producers showed they sometimes make these changes in herd make-up without explicitly relating them to the effects on butterfat tests. For example, grossly incomplete answers were given to questions on indicated changes in test in response to further changes in the price differential-both up and down. The effects of a change in butterfat price differential to test and production will be discussed in more detail later in the analysis.

Adjustment Under Long-Run Cost

In a competitive industry, the individual firm seeks to maximize income through equalizing the marginal cost of an additional unit of output with the marginal revenue obtained from the sale of that unit. Since the individual firm in a competitive economy is such a small part of the total, the marginal revenue and price are synonymous.

The position of long-run equilibrium for the firm is at that output where average cost is at a minimum. In Figure 3, this equilibrium position would be at output OB and at a price and cost of OX. Any other position on this curve less

Figure 3. Hypothetical Cost Curve



than OB would be unstable because the firm can expand production and decrease its average cost without the price being appreciably affected.

If constant cost conditions for the industry were now assumed, then any output other than OB would be unstable. All adjustment would be in the direction toward OB.

Under competitive conditions and constant cost, any expansion or contraction of output would be through the entrance or exit of firms to and from the industry. For those firms remaining in the industry no changes in output would occur. New technology introduced into the field would lower the cost of each 'typical firm' by some amount, although this would not hold true for a particular firm.

In the analysis of the output behavior of the sample taken of long-time dairy producers in the Tulsa milk-shed,

conditions of constant costs for a competitive industry appeared to be applicable. In comparing 1952 with 1951, the relative price of milk was fairly stable and relative costs did not fluctuate greatly. For these conditions, output per firm in 1952 decreased by .3 percent from 1951. It is feasible that this variation was due to the dry weather conditions late in 1952 which could be classed as a normal fluctuation. Thus, this variation was assumed to be applicable to all new producers coming on the market.

Under this theoretical assumption, the output of milk should change directly with the change in the number of dairy producers. In 1951, an average of 781.9 producers had an average annual production of 143,118 pounds of milk. In 1952, the average number of producers had increased to 816.5. Assuming that the .3 percent decline in average production applied to these new producers, the output of milk for the Tulsa market should have been 109,399,346 pounds, a difference of 1,518,930 pounds from that amount placed on the market.

It is evident then, that some of the firms in the market were not in equilibrium. There are two types of phenomena advanced as partial explanations for this error of estimation. The first deals with the turnover of producers in the market, and the second deals with movements along the long-run average cost curves of the relatively new producers.

The turnover of producers is important because an 8 cow herd might be replaced in the market by a 20 or 25 cow herd; this would have the effect of raising the average production

per producer above the figures used for the original calculations. It would thus lead to an under-estimate of the milk on the market in 1952. There is no way of determining the size of this influence. However, from the sample data, this type of movement does not seem to be too important.[1]

The movements along the long-run average cost curve for the new producers would appear to be a more important cause of this error of estimate. It is not likely that a new producer would have sufficient knowledge and ability to begin milk production at his optimum output. If is perhaps more likely that a producer entering the market in 1949 or 1950 (and still in production) would be operating somewhat short of the output OB in Figure 3. He might enter at, say, output OA. The long time adjustments for these producers would then be toward OB. The size of these adjustments might well be measured in terms of one or two cows if these producers make up as much as one-third of the total producers on the market.

[1]Note the stability of herd size both in the aggregate and in the class intervals of Table 1.

CHAPTER IV.

TESTS

It was noticed at the beginning of the interviewing that the majority of the producers were consistent in one point: that the butterfat content of milk had decreased since the Order became effective. From the sample producers, 71.5 percent said that the butterfat tests had definitely decreased, 18.4 percent said the tests had remained about the same, and 7.9 percent did not know. There was one producer who said that the average butterfat test in milk from his herd had increased. To account for this increase, it was determined that the producer had been up-grading his herd with Jersey stock, and culling out low-grade mixed cows.

Response to Further Changes in Butterfat Differential. If the butterfat differential paid for each 1/10 of test point above and below 4.0 percent milk were lowered to $ .05, producers thought this would have very little effect as to changes in their total production, butterfat test, or the make-up of herds. Only 2.4 percent said they would decrease butterfat and increase total production to some point; 45 percent did not believe $ .05 would be sufficiently different from the present $ .078 to induce them to make a change; the remaining 52.4 percent did not form an opinion of any kind.

By raising the butterfat differential to $ .12 per 1/10 test point, 41.5 percent of the producers indicated that they would definitely change their herd so as to increase the

butterfat content of milk. Fifty-eight percent of the producers gave no direct answer to the question and thus formed a 'no opinion group'.

Producer Opinions of Testing Program. When producers were queried as to their opinion of the present testing program, 88 percent of the total answered and 12 percent gave no comment whatsoever. Answers received either termed the testing program fair or unfair. Forth-two percent of the producers complained that the program was bad.

Several reasons were given by the producers to justify their answers. The first and most important reason contributing to this opinion was that testers seemed very careless in taking samples and running tests.

Other factors believed by producers to have been effective were variations in tests which were too great. Different tests sometimes resulted from the same cows under different ownership. Also the Dairy Herd Improvement Association tests were constantly above those of the Pure Milk Producers Association testers. These faccors undermined the confidence of the producers in the testing program.

It was noted that a large percentage of the producers who termed the testing program as being unfair, willingly admitted that the make-up of their herds had changed. This existing tendency to deviate from pure bred stock to mixed herds for more total milk production had its effects on the tests obtained by producers but they may not have recognized this in conjunction with their opinions.

Expected Test Variation. Tests within a herd have a certain amount of variation from time to time. Producers were asked how much variation they expected from one test to another and to what factor or factors they attributed the variation.

Among the more noteworthy answers received as to the extent of these variations, the more frequent causes and the percentages of producers giving the same cause are given as follows: 25.6 percent attributed test variation to the weather while 20.9 percent of the producer sample ascribed test variation to the temperament of the cows. Fourteen percent said feed was an important cause of test variation. Nine and three-tenths percent assigned the variation solely to the testers, either in their method of taking a sample for a test, or carelessness in running the test itself. Because of either a lack of information concerning dairy cattle or ignorance as to the testing of milk for butterfat, one-third or 30.2 percent of the producers did not have any idea as to why butterfat tests of milk may change from one period to another.

The actual amount of variation that can be expected in the butterfat tests of a herd within a month met with a majority of opinions of producers. Eighty-five percent of the producers said .1 to .3 of a test point was the usual variation which could be expected. They felt that this was no more than a normal variation in a healthy dairy herd, but did expect this to be a true variation, up as well as down over a test

period. More than .3 of a test point variation was expected by 10 percent of the producers because of the relatively long period of a month where the weather, feed, and the temperament of the cow had a chance to intervene. The remaining 5 percent of those interviewed said they expected no variation within a month, but did not give any substantial reason supporting this expression.

Number of Tests Per Month. Producers differed some as to what they considered an adequate number of tests per month that should be taken. It was found that 9 percent of the producers, because of lack of knowledge of dairy cattle and testing or for other reasons unknown, had no opinion as to the frequency tests should be taken to give a fair over-all average test. Approximately 22 percent of those surveyed agreed that daily tests were necessary to get a true and fair test of the herd. These producers seem to have realized that this procedure was practically impossible, considering the size of the milk-shed and the producer group, but definitely thought that tests were needed more often than were given in the present testing program. A large percentage of the producers showed approval of the present number of 10 tests per month now being carried out. About 46 percent of the producers preferred 10 to 12 tests per month. The other 22 percent preferred 14 to 20 tests per month.

Trend of Butterfat Tests

As has been previously mentioned, butterfat tests in

producer milk has been on a downward trend since the Order became effective. (See Table 3.) The reason for this decrease has not yet been comprehended by the producers, and has been a source of misunderstanding and false opinions. Herewith will be attempted one answer as to why the tests have decreased with no conscious effort on the part of the producers. As the average herd size has remained about the same since the Order, the number of cows per herd or the number of herds does not seem to have been a major cause. At the present there seems to be a tendency toward mixed herds in the area and this no doubt would affect tests in that the herds are predominately lower test breed dairy stock. Figure 2 shows in picturesque form why breeds of cattle with high total milk production and relatively low butterfat tests were added to existing dairy herds. In 1949, just prior to the Order, a premium of approximately $ .11 was paid for each 1/10 of a test point over 4.0 percent milk and was accordingly deducted for each 1/10 of a test point for milk under 4.0 percent. With the issuance of the Order, price was no longer determined by the plants. The Order price is set by rule; i.e., the butterfat differential is priced by a particular relationship to the price of butterfat on the Chicago market. With a steadily increasing demand for milk and a decreasing butterfat differential or premium paid for butterfat, it naturally becomes more profitable for producers to supply a larger quantity of milk at a lower butterfat test than to supply a smaller amount with a higher test.

Table 3. Percentage of Butterfat in Producer Milk
October 1949 December 1952

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ave.
1949										4.07*	4.05*	4.40*	4.17
1950					4.09	4.04	4.15	4.18	4.22	4.25	4.18	4.19	4.16
1951	4.10	4.05	4.01	3.85	3.81	3.86	3.86	3.90	4.07	4.28	4.39	4.13	4.02
1952	4.01	3.95	3.96	3.84	3.84	3.84	3.48	3.84	3.99	4.20	4.30	4.25	3.96

Source: The records of the Pure Milk Producers Association, Tulsa, Oklahoma.

* Composite pay test of fifteen of the sample producers.

By the analysis of Figure 2, together with Table 4, this change in production will be clarified. For the explanation, a constant price of $5.00 per cwt. for 4.0 percent milk will be used. A price differential in 1949 of approximately $ .11 dropped through a gradual decline to about $ .08 in 1953. Consider that in 1949 a producer produced 1000 pounds of milk daily of 4.2 percent milk, and received the constant price for this milk of $5.00 per cwt., plus the butterfat differential of $ .11 for each 1/10 of a test point over 4.0 percent. He would thus receive a total price of $5.22 cwt. or a total of $52.20 for the 1000 pounds of milk ($5.22 x 1000 lbs.). Under the present conditions, for the same number of

Table 4. The Effects of Hypothetical Alternative Tests and Butterfat Differentials on Gross Receipts of Producers

Year	Price of Milk	Test	Total Pounds	Butterfat Diff.	Total Payment
1949	$5.00	4.2	1000	$ .11	$52.20
1953	5.00	4.2	1000	.08	51.60
1949	5.00	3.8	1092	.11	52.20
1953	5.00	3.8	1092	.08	52.85

pounds of milk, but an 8 cent butterfat differential, he would receive a total amount of $51.60 for the 1000 pounds, or $ .60 less than that received in 1949.

Using the same constant price of $5.00 cwt. for 4.0 percent milk, but considering the 3.8 percent milk rather than

the 4.2 percent and using the same $ .11 differential, the producer would have to produce 1092 pounds of the lower test milk to receive the same total amount of $52.20. Now by using the 1953 butterfat differential of 8 cents for the 1092 pounds of milk under consideration, he will receive $52.85. This is an increase of $ .65 over that for the same number of pounds in 1949 for 3.8 percent milk.

Let us now consider the effect of a change from 4.2 to 3.8 percent milk. By using the same differential of 8 cents for the year of 1953, but changing the butterfat content from 4.2 percent to 3.8 percent, a difference of $1.25 increase would be obtained from the change in test. That is, by producers selling 1000 pounds of 4.2 percent test milk they would receive $51.60, and by decreasing tests to 3.8 percent and increasing production to 1092 pounds they would receive $52.85 or a $1.25 increase.

This change in butterfat can be accomplished by changing the breed or by mixing breeds. For example, a Jersey herd could be replaced by Holsteins in a 3:2 ratio. The expected production yield of the Jersey is 6000 pounds of milk with an average fat test of 5.3 percent[1], or 318 total pounds of butterfat. Holstein expected production is 9000 pounds of milk with an average butterfat test of 3.5 percent[2], or 315 pounds of total butterfat.

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[1] Summary of the Data on the Various Dairy Breeds. Dairy Department, Oklahoma A. & M. College, Stillwater, Oklahoma.

[2] Ibid.

With an expected milk production of 6500 pounds annually, a Guernsey herd replaced by Holsteins in total milk production could be done by a ratio of 1.38:1. By a mixture of such breeds as the Jersey with the Holstein and/or the Guernsey with the Holstein, both lower butterfat and higher production can be accomplished.

It is with these results in mind, that producers have changed their production in milk to a lower butterfat content, yet with a higher total poundage.

Evidently this increase in production was brought about by no increase in cost. As has been previously shown, the 1953 dairy herd in the area is actually a fraction lower than the average herd for the period of 1949-53 inclusive. The existing strong tendency in the area for a mixed herd, dominated by a higher milk production breed, could have resulted in increased production with no increase in cost.

CHAPTER V.

SEASONAL PRODUCTION

Necessary Price for Stable Production

The majority of the producers had adjusted or were in the process of adjusting their farm organization and production to the present seasonal dairy price cost relationships. The actual price entering in this adjustment was 40 cents per cwt., as stated in the Order, Section 906.51:

> (a) Class I milk. The basic formula price plus $1.25 during the months of April, May, June and July, and plus $1.65 during all other months: Provided, that for each of the months of September, October, November, and December, such price shall not be less than that for the preceding month, and that for each of the months of April, May and June such price shall not be more than that for the preceding month.[1]

This was later ammended effective January 1, 1953 to read as

> (a) Class I milk. The basic formula price plus $1.45 during the months of April, May and June and plus $1.85 during all other months: Provided, That for each of the months of September, October, November, and December, such price shall not be less than that for the preceding month, and that for each of the months of April, May and June such price shall be not more than that for the preceding month . . .[2]

As was found in the survey, the fall price premium necessary to have stable seasonal production varied from more than to less than 40 cents. Fifty percent of the producers in the area were currently undergoing adjustments. This is to say

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[1] United States Department of Agriculture, Production and Marketing Administration, Federal Milk Marketing Order No. 6, p. 4.

[2] Ibid., as ammended.

that an amount of 40 cents was sufficient to induce these producers to move in the direction of stabilized seasonal production in their own herds. Approximately 14 percent of the producers had already adjusted for less than 40 cents. By including these two groups, there would be 64 percent of the total attempting to stabilize seasonal production for the 40 cents fall premium under the Order. Some amount greater than 40 cents would be necessary to encourage an additional 26.2 percent of the producers to make changes so as to have uniform production over the one year period. The remainder said that to stabilize seasonal production or to produce milk in the winter in amounts equivalent to spring production, was practically impossible and that they could not do so at any price differential.

Cost in This Differential. The majority of the sample producers explained that the major costs involved in making this adjustment were feed and the expense incurred by changing the breeding program. Eighty-nine and three-tenths percent of the total producers in the group reported that feed was the major cost; the remainder, 10.7 percent, concluded that the breeding program was the major cost in stabilizing seasonal production.

Producers were questioned regarding the major feed cost and feed shortage. According to 62 percent of the group, a shortage of feed was due to the lack of insufficient land for both pastures and the growing of feed crops. The 14 percent having sufficient amounts of land, but yet were short

of feed, indicated that the weather was the chief cause. The remaining 24 percent mentioned other factors which did not appear to be relevant for this analysis. By further questioning of this 24 percent of the producers, it was learned that none of those in this group produced any grain whatsoever for feeding purposes.

Feed. The proportion of feed grown by producers varied from 0 to 100 percent. The median percentage of home grown feed was between 21 and 40. Six and six-tenths percent of the sample producers produced less than 20 percent of their total feed requirements. The largest group was that of producers harvesting 21 to 40 percent of required feed: this group included 54 percent of the total number of producers interviewed. Fourteen and three-tenths percent were producing between 41 and 60 percent of their feed, 17 percent producing 61 to 80 percent, and 8.6 percent producing from 81 to 100 percent of their herd feed requirements.

Labor. Hired labor was not a major cost in seasonal adjustment possibly because of the relatively small amount of labor hired by dairymen in this area. Less than 20 percent of the labor was hired on 65 percent of the farms used in this study. Between 21 and 40 percent of the labor was hired on 8.7 percent of the farms, 41 to 60 percent on 18 percent of the farms, and 8.7 percent of the labor was hired on the remaining 8.3 percent of the farms. Perhaps one reason for the samll amount of hired labor lies in the fact that Tulsa, comprising the milk market, is a highly industrialized city

requiring a relatively large amount of labor. Thus, the remuneration in the alternative employment of labor makes labor used in the dairy enterprise quite expensive.

Adjustment Under Base Surplus

Market adjustments under the base surplus plan are still in continuance. Adjustments to the available land in the farm lay-out in coordinating permanent and supplemental pastures and feed crops consume a considerable length of time and require various trial changes. A relatively long period of time must elapse to bring the breeding schedule of a dairy herd to an almost complete reversal. By and large, these adjustments are being made by the producers of the area at a fairly rapid pace.

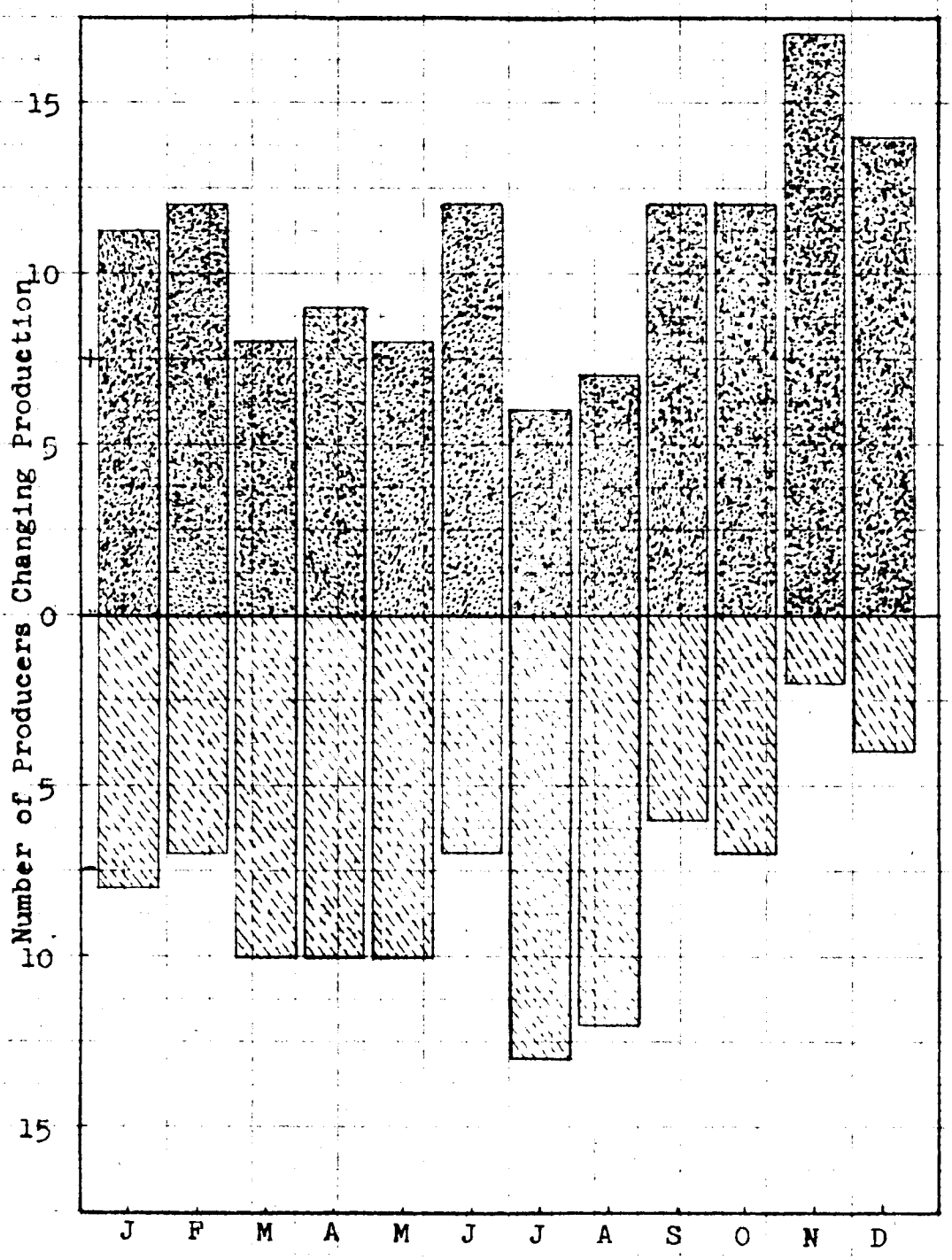
In Table 5, the increases or decreases made in production for individual producers are shown. It should be noticed that in 7 months out of the 12, a majority of farms has increased production in 1952 over 1951, with the largest increases being made in the base setting months. The effect the base surplus plan has had on production is shown further in Figure 4. The chart gives the number of dairies out of a total of 19, that has increased and the number that has decreased production by months in 1952 over 1951. In November, 89.5 percent of the dairies showed an increase in production; in December, 74 percent had increased. Production had decreased on 52.6 percent of the farms in March, April, and May, and 68.4 percent of the farmers had a decrease in July production.

Table 5. Production Changes of 19 Dairies
1952 Percentage Increases and
Decreases Over 1951

Dairies	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4	9	- 9	1	9	-15	-32	-15	10	-13	78	64
2	-25	-10	-14	-40	-38	-47	-51	-25	-48	-36	-11	- 3
3	30	17	- 4	-20	-17	- 4	-25	6	28	38	49	38
4	-92	-76	-80	-66	-52	-41	-36	21	62	43	22	74
5	-16	-16	- 7	- 4	14	8	9	51	50	9	7	97
6	-12	- 5	3	19	- 3	- 1	-11	- 5	0	7	12	0
7	25	27	26	10	0	15	- 8	- 6	8	4	6	21
8	5	-11	-14	- 8	-29	-30	-14	5	5	18	18	25
9	29	18	5	-13	-13	48	18	46	83	83	39	58
10	33	56	- 1	- 2	10	43	3	-41	-40	- 8	-92	-27
11	6	3	- 4	33	20	3	- 8	-28	12	15	7	13
12	24	10	15	24	15	12	-16	-16	9	38	35	11
13	-58	-61	-38	26	98	48	17	23	40	43	47	56
14	-25	-23	3	- 4	- 2	3	- 9	-24	-17	-11	24	15
15	11	9	0	17	-33	20	17	2	5	5	18	13
16	17	15	21	28	26	8	-28	-21	-18	-20	17	21
17	31	45	20	-10	-25	-44	-38	-36	-29	-14	18	10
18	45	2	11	18	20	16	14	- 8	3	2	19	7
19	- 5	1	-18	- 3	- 1	9	-10	-12	-38	-21	46	27
Number :												
Decrease:	8	7	10	10	10	7	13	12	6	7	2	4
Increase:	11	12	8	9	8	12	6	7	12	12	17	14

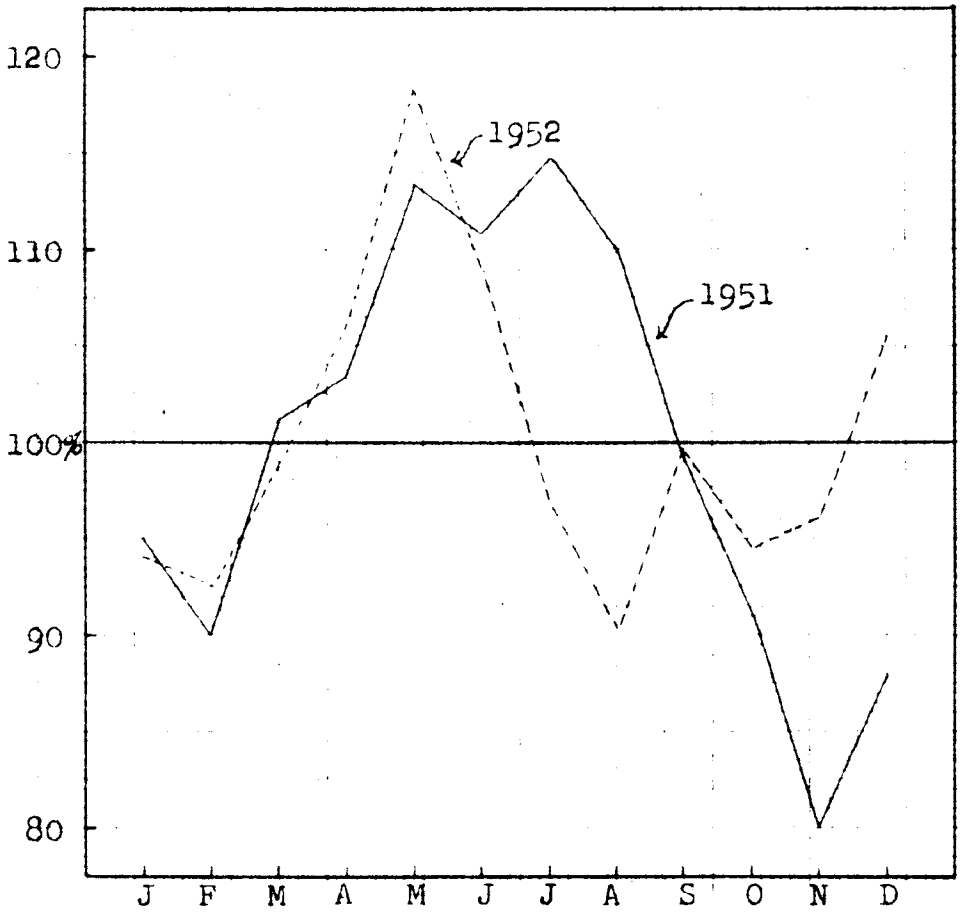
Source: Data acquired from the Pure Milk Producers Association, Tulsa, Oklahoma.

Figure 4. Direction of Change in Production of 19 Producers Dairies 1952 over 1951 by Months



Source: Data acquired from the Pure Milk Producers Association, Tulsa, Oklahoma.

Figure 5. Seasonal Variation of 19 Producers in Tulsa Milk-Shed 1951 and 1952



Source: Data acquired from the Pure Milk Producers Association, Tulsa, Oklahoma.

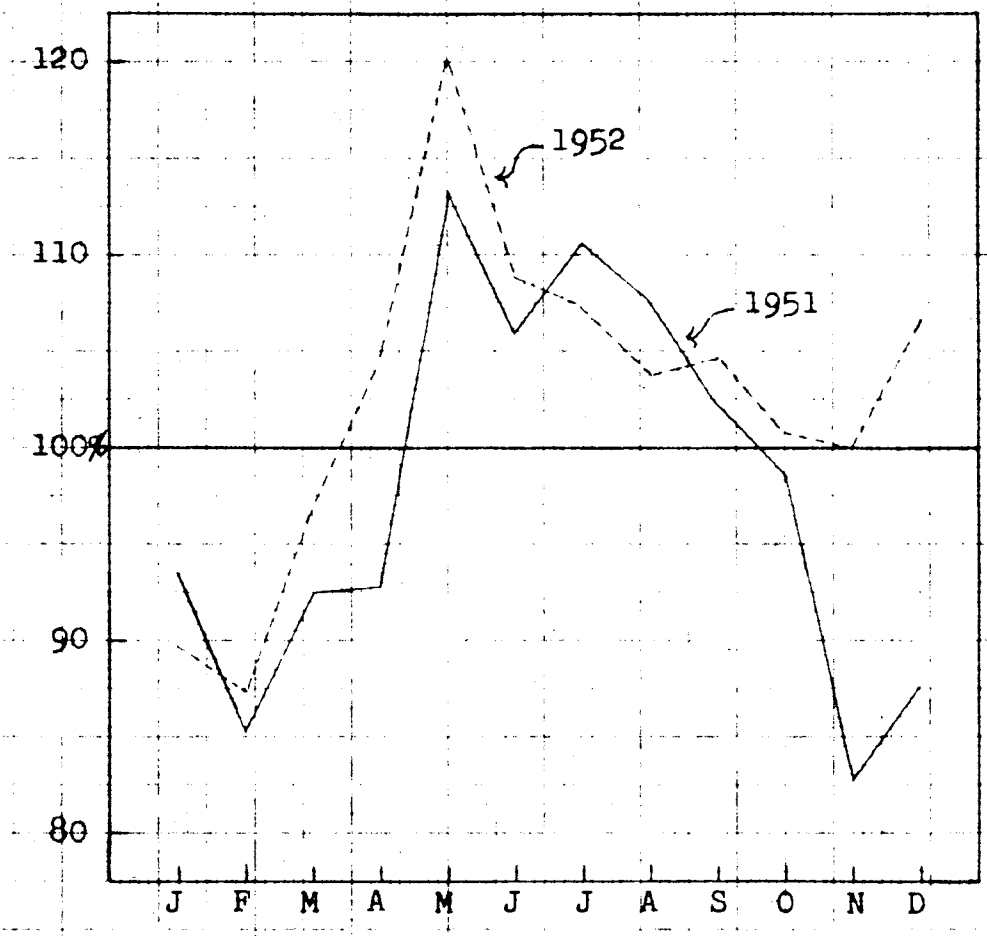
To carry these effects of the base surplus plan a bit further, Figure 5 shows the magnitude of seasonal change in production of the original 19 producers. The peak of production occurred in May of 1952, and immediately dropped during the months of June and July and reached its lowest point in August. The highest periods of production in 1951 occurred in May, June, and July, with a steady decline until November. Thus, in spite of the adverse weather in the fall of 1952, it is evident that producers were attempting to level out production over the entire year, by reducing the over-supply in the spring months and increasing the winter supply of milk.

However, these producers have made the adjustment no more satisfactorily than the aggregate of all producers on the market. Figure 6 gives the seasonal variation of the market for 1952 over 1951. A comparison of Figures 5 and 6 would lead to the conclusion that the total market is about as closely adjusted for seasonal production as the group of sample producers. Even so, considering only the last 6 months of 1952 as the beginning of a trend, then perhaps the sample producers have made a better start toward curtailing summer production than have the total of all producers.

Opinions of Base Surplus Plan

The base surplus plan is accepted by the major portion of the producers in the Tulsa milk-shed area as being the most just and fair way of pricing and handling surplus milk. It was termed thus so by 79 percent of the milk producers interviewed. Opinions differed as to the base setting period

Figure 6. Seasonal Variation in the Tulsa Market 1951 and 1952



Source: Marketing Administrators Bulletin, Monthly, Tulsa, Oklahoma Marketing Area, 1951-1952.

and to the length of time over which the period should extend, but the producers agreed in general on other points.

Aside from being a fair way of pricing surplus milk, the second major point of interest was that the majority agreed that this plan kept out the seasonal or part time producers. That is, some producers commenced putting milk on the market as soon as pastures permitted good grazing for the herd in the spring, continued production through the pasture months, and stopped production in late fall and winter. This type of producer was felt by the regular dairymen as being responsible for the large supply of milk in spring and early summer, with this over-supply causing a lower price for milk during the period. Undoubtedly, the base surplus plan would discourage such operations.

Third, such a plan made it relatively easy for a producer to regulate his production through out the year. A producer could tell ahead of time just how much Class I milk he could market in the spring. This would afford him some basis for regulating breeding practices.

The fourth point was that the base surplus plan was encouraging higher fall and winter production; thus generally causing a higher spring price for milk. Producers found that their incomes were spread out more evenly over the year, and could be used in a more efficient manner.

Those producers who did not accept the plan as being a fair way in the pricing of surplus milk, were of the opinion that the milk price should be left entirely up to the supply

and demand of the product. This group of producers composed about 10 percent of the producer sample.

Eleven and six-tenths percent of the producers in the sample said they had no idea of fairness or unfairness of the base surplus plan. These producers were either not well enough acquainted with the plan perhaps because of lack of information or were relatively short time producers who had not yet fully decided upon the good or bad features of the program.

CHAPTER VI.

PRODUCER OPINION UNDER FEDERAL ORDER

Production Stability Caused by the Order

It is the opinion of some of the producers that a certain amount of stability in production is caused by the Order. The data and opinions used in this section are insufficient both in amounts and scope for a direct answer to be made as to the amount of stability, if any, caused by the issuance of this ordinance. The type of data that would be necessary to definitely prove this point was either inadequate or unobtainable for this analysis.

In answering questions pertaining to this part of the analysis, producers had difficulty or did not always distinguish clearly between annual and seasonal production stability. Thus, some reservations may be in order for the conclusions which will be drawn.

The two most important opinions of the producers as to why their seasonal production has become more stable were, first, they felt that the Order had brought about a more dependable price throughout the year, and second, the base surplus plan gave them a basis for planning future production.

Producers answering questions regarding stable annual production since the Order were divided into three different groups: those who said that their production was more stable, those who could see no noticeable change, and those who were confident production was not as stable.

The 32.5 percent who claimed the Order had helped stabilize production were of a somewhat more 'long-time' group of producers, with an average length of time of 9.4 years in the dairy business. These producers were also found to be fairly well informed on the Federal Marketing Order, the activities of the Pure Milk Producers Association, and the Tulsa market.

The 'short-term' group of producers formed the majority in answering that they could see no appreciable stabilizing effects caused by the Order. With an average of only six production years for the group, there were many who had not produced sufficiently long before the Order to answer the question with much confidence. From the lack of long-time experience behind these producers, no doubt the Order had little or no effect on the seasonal or annual production that could be seen by them.

The 44 percent who claimed that production was not as stable as before the Order were in a process of adjustment. Out of the 44 percent, over half were either changing to some other enterprise or went out of production entirely early in 1953. Thus leaving aside the undesided group of producers, that is, those producers who saw no effects of the Order either pro or con, we have on the basis of pure numbers a larger group who thought the Order was destabilizing than the group who thought it to be stabilizing. From these two groups, two opposite conclusions are formed; one, that the Order did not stabilize, and two, it did cause some stability.

The data was analyzed to see if any differences occurred

in the average length of time the two groups had been in the dairy business. The difference was negligable in that one group averaged 9.4 years, and the other averaged 8.7 years. Then it was checked to see if the average herd size differed by any appreciable amount. The average herd size was almost the same, with only .3 of a cow difference. It was also found that the average annual production for the two groups for all practicable purposes was the same.

If there was any stability caused by the Order, it was evidently relatively small as compared with other available alternatives to the producers making the adjustment. Thus, based on the preceding analysis of the opinions of all producers, it is doubtful whether any measurable stability was caused by the Order.

Advantages and Disadvantages

The advantages and disadvantages of the Federal Milk Marketing Order Number 6, regulating the handling of milk in the Tulsa, Oklahoma marketing area, are given as they were seen by the sample producers, and are not necessarily subscribed to as to their validity by the writer. Producers were interviewed on their individual farms and were questioned directly as to the effects of the Federal Order upon them in relation to their own particular dairy enterprise. The advantages and disadvantages given herein are those that were most frequently given and seem to be the more important. It is not within the scope of this study to give a complete list of all the advantages and disadvantages but only those which were

outstanding and possibly could be corrected. Some of them are overlapping in their scope and content, but differ enough in the expressions of the producers to be listed separately.

There were 25.6 percent of the producers who would not comment as to the advantages of the Federal Order for one reason or another. It was concluded by 23.2 percent of the sample producers that there were no major disadvantages of the Order while 30.2 percent of the total saw no advantages of the Order. Some of the producers were in this group because of misinformation and lack of understanding of the Order as may be seen by comparing disadvantages numbered 8 and 9.

Advantages and disadvantages are listed as to rank of importance. The number of identical advantages and disadvantages is listed in parentheses as a percentage of the 32 producers answering.

Advantages.

1. The stabilization of price. (31.2%)
2. Regulation of production by price and base period. (31.2%)
3. The regulation of price. (25%)
4. The improvement of the testing program. (21.9%)
5. Bringing about a fair method for handling surplus milk. (9.4%)
6. Improved the general situation in the market. (9.4%)
7. It gave the farmer somewhat of a voice in how milk was to be marketed. (6.2%)
8. Restrained collusion among plants. (3.1%)

9. It handicaps the summer producer. (3.1%)
10. Producers know what use milk is put to after it leaves his farm. (3.1%)

Disadvantages.

1. The testing program since the Order.[1] (34.4%)
2. Too high administrative and/or market cost. (31.2%)
3. Mismanagement in general. (18.8%)
4. Government interference. (12.5%)
5. Lower prices. (12.5%)
6. Plants do not have to worry about a surplus of milk. (6.2%)
7. Does not set a long enough base period. (6.2%)
8. The pricing procedure is hard to understand. (3.1%)
9. Ordinance and pricing system can not be comprehended. (3.1%)
10. Base surplus plan. (3.1%)

[1]The reader is referred to the chapter on tests.

CHAPTER VII.

SUMMARY AND CONCLUSIONS

Tulsa draws its milk supply from a relatively large area, with a radius of 100 miles supplying approximately 90 percent of the market milk. The largest proportion of the supply comes from the area east and northeast of the city extending as far as and into the southwest corner of Missouri. It is expected that in the years to come, this area will continue to supply Tulsa with its major supply of milk, for in several ways dairy farming in this area is better adapted than in the other localities.

The average size of the dairy herd has shown very little change over the past five years. The average for the period was 22.5 head per herd. The high for the period was 1951 with 23.5 head, the low was 1953 with an average for six months of 21.5 head.

Annual production has been on a steady increase, from 112 million pounds in 1951 to more than 118 million pounds in 1952. This is 74 million pounds more than the annual production in 1937. The average production per producer increased 2,544 pounds in 1952 over 1951. Production in 1951 per producer was 142,116 pounds and in 1952 was 144,160 pounds. However most of this increase came about through adjustments of the relatively new producers coming on the market.

From the data on herd size and production, one conclusion would appear to be justified. That is, for all practical

purposes, conditions of a competitive industry operating under constant cost can be used to predict producer actions in this milk shed.

Adjustments to present price cost relationships have been completed by 68 percent of the producers. The remaining 32 percent were either in the process of adjustment or had turned to alternative enterprises.

Significant responses of production to changing prices of alternative products, primarily milk and beef, were indicated by the farmers. In this area, if the price of beef were high relative to the price of milk, then the farmers would switch from milk production to beef production. For example, if beef were $25.00 and milk were $4.00 per cwt., then only 40 percent of the farmers surveyed indicated that they would remain primarily in milk production. At the other extreme, if beef were only $14.50 and milk were $6.00 per cwt., then 90.6 percent of these farmers would maintain milk production as the primary enterprise on the farm.

It was concluded that there is a positive long-time relationship existing between the butterfat price differential paid for milk over a 4.0 percent test and the butterfat content of producer milk. For example, in May 1950, the differential was 10 cents, and the test was 4.09 percent; in May 1953 the differential was 8.1 cents, and the test was 3.8 percent.

According to the opinion of the producers interviewed, there seems to be some degree of carelessness in the testing

program. A large percentage of the producers claimed that the testers were careless not only in taking the sample but also in running the test. Insufficient knowledge of the testing program and/or of test variability may have been responsible for these producer opinions. However, whatever the reasons, the faults should be corrected, for they undermine the producers' confidence not only in the testing program but also in the administration of the Association, and the Federal Marketing Order.

It is doubtful whether any stability in annual production was caused by the Order. The available data which were obtained and used in the analysis were equally divided as to the pros and cons of stability caused by the Order, thus forming two opposite conclusions. In seasonal production there are several factors which point to more stability since the Order. Unfortunately, because of the lack of adequate data this can not be proved.

It is believed by the writer that surplus milk during the flush periods could be reduced by the Pure Milk Producers Association by controlling the hauling of producer milk from assembling points to the plants. As the situation is at the present, some plants have an overage of grade 'A' milk while at the same time other plants can not meet their demands. The haulers to the plants that are short of milk encourage new producers into the dairy enterprise so as to meet the plants' grade 'A' demands. With an existing market surplus of milk, this maneuver only adds to and enlarges the problem of marketing. By

controlled hauling, the supply of milk could be delivered to plants only in amounts to equal their demands, so reducing the number of new producers encouraged into the business and thus reducing the quantity of milk in the area.

The base surplus plan is accepted by the larger percent of the producers as being the most fair way of pricing and handling surplus milk, but not without dissention by some of the producers who felt that the allocation should be left up to supply and demand. The base surplus plan has perhaps been responsible for several needed improvements in farm and herd management of the area. For example, improvements noted were; changes in breeding schedules, reduction in surplus milk, higher fall and winter production and increased use of supplemental pastures.

Numerous advantages and disadvantages were advanced by the producers on the Order. All of these could not be given in the analysis but only the more important ones. These might be used as a guide by responsible persons in the market to improve, better, and bring about a more efficient and orderly marketing program in the Tulsa milk marketing area. It would be of some value if producers were furnished with more information concerning the workings of the market in general, Pure Milk Producers' Association, and the Federal Milk Marketing Order.

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APPENDIX

Table 6. Monthly Butterfat Differential of Class I Milk in the Tulsa Market 1949 - 1953

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ave.
1949	10.		11.			10.	10.	10.	10.	10.	10.	10.	10.14
1950	10.	10.	10.	10.	10.	7.5	7.5	7.5	7.6	7.8	7.9	8.0	8.65
1951	8.3	8.7	8.6	8.3	8.3	8.7	8.5	8.3	8.3	8.4	8.7	9.4	8.54
1952	9.8	9.9	10.4	9.1	8.7	8.6	8.9	9.1	9.1	9.1	8.9	8.7	9.10
1953	8.4	8.4	8.4	8.3	8.1	8.1	8.1						

Source: United States Department of Agriculture, Bureau of Agricultural Economics, Monthly, Fluid Milk and Cream Report, 1949-1953.

Table 7. Monthly Butterfat Differential (Base Excess) in the Tulsa Market May 1950 June 1953

Year	:Jan.	:Feb.	:Mar.	:Apr.	:May	:June	:July	:Aug.	:Sept.	:Oct.	:Nov.	:Dec.	:Ave.
1950					7.2	7.2	7.2	7.3	7.5	7.6	7.7	8.0	7.46
1951	8.4	8.3	8.0	8.0	8.3	8.2	8.0	8.0	8.0	8.4	8.8	9.4	8.32
1952	9.5	10	8.8	8.4	8.2	8.3	8.5	8.7	8.7	8.7	8.3	8.1	7.92
1953	8.0	8.0	8.0	7.8	7.8	7.8							

Source: Marketing Administrators Bulletin, Monthly, Tulsa, Oklahoma Marketing Area, 1950-1953.

Table 8. Uniform Base Price in the Tulsa Market
May 1950 December 1952

Year	:Jan.	:Feb.	:Mar.	:Apr.	:May	:June	:July	:Aug.	:Sept.	:Oct.	:Nov.	:Dec.	:Ave.
1950					4.14	4.08	4.04	4.44	4.70	4.94	5.03	5.09	4.56
1951	5.41	5.64	5.71	5.76	5.57	5.48	5.17	5.35	5.58	5.79	5.87	5.96	5.61
1952	6.11	6.19	6.30	5.80	5.73	5.65	5.67	5.76	6.39	6.66	6.60	6.51	6.11

Source: Marketing Administrators Bulletin, Monthly, Tulsa, Oklahoma Marketing Area, 1950 - 1952.

Table 9. Number of Grade 'A' Producers on the Tulsa Market May 1950 June 1953

Year	:Jan.	:Feb.	:Mar.	:Apr.	:May	:June	:July	:Aug.	:Sept.	:Oct.	:Nov.	:Dec.	:Ave.
1950					729	735	739	747	757	766	764	767	750.5
1951	770	760	772	759	758	753	787	800	805	818	806	795	781.9
1952	794	797	798	790	787	792	811	831	835	846	861	856	816.5
1953	868	869	863	866	862	857							

Source: Marketing Administrators Bulletin, Monthly, Tulsa, Oklahoma Marketing Area, 1950 - 1953.

Table 10. Dairy Herd Size of 43 Producers Interviewed, Tulsa Milk-Shed, 1949-1953

Number of Cows	1949	1950	1951	1952	1953
10 or less	1	2	2	2	5
11 - 20	23	23	23	20	17
21 - 30	7	6	5	9	8
31 - 40	2	3	3	4	1
41 or over	4	5	5	3	4
Unknown	6	4	5	5	8
Total Herds	43	43	43	43	43
Average Size	22.5	23	23.5	22.4	21.5

Source: Data acquired from interviews with producers in the Tulsa, Oklahoma Milk-Shed.

Table 11. Oklahoma Milk-Feed Price Ratio
1949 - 1953

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1949	1.637	1.700	1.530	1.389	1.379	1.459	1.433	1.455	1.658	1.755	1.748	1.696	1.569
1950	1.634	1.543	1.435	1.304	1.200	1.309	1.278	1.296	1.549	1.654	1.630	1.559	1.442
1951	1.588	1.574	1.505	1.428	1.306	1.361	1.400	1.490	1.595	1.638	1.651	1.570	1.509
1952	1.549	1.543	1.502	1.358	1.305	1.351	1.401	1.406	1.554	1.670	1.709	1.705	1.505
1953	1.528	1.514	1.446	1.344	1.254	1.285							

Source: Oklahoma Current Farm Economics, Bi-Monthly, Division of Agriculture, Oklahoma A. & M. College, Stillwater.

Table 12. Pounds of Producer Milk Delivered to the Tulsa Market May 1950 June 1953

Month	1950	1951	1952	1953
Jan.		8,666,329	8,604,437	10,830,921
Feb.		8,191,485	8,371,802	10,201,426
Mar.		8,878,152	9,276,375	11,840,395
Apr.		8,889,210	10,069,750	12,595,709
May	9,736,680	10,869,375	11,527,705	13,938,149
June	9,988,231	10,161,840	10,446,623	12,113,032
July	9,819,777	10,608,448	10,295,650	
Aug.	9,450,009	10,305,454	9,959,434	
Sept.	8,828,430	9,841,650	10,021,339	
Oct.	8,306,419	9,450,206	9,651,627	
Nov.	7,705,590	7,941,424	9,589,585	
Dec.	8,228,826	8,396,942	10,228,357	

Source: Marketing Administrators Bulletin, Monthly, Tulsa, Oklahoma Marketing Area, 1950 - 1953.

QUESTIONNAIRE

Name_____ Member_____

Can No._____ Non Member_____

Dairy_____

Part I. Production

1.

Months	1949 Lbs/Can	1950 Lbs/Can	1951 Lbs/Can	1952 Lbs/Can	1953 Lbs/Can

Production:
Lbs. or Can

Present_____.

Last Winter_____.

This time last year_____.

Note:_____.

2. How much have you changed your production since the order came into effect?(lbs. or cans)_____.

3. Is your production more stable from year to year now as compared with that before the order? Yes___No___. Why?_____.

4. What was the size of your milking herd in 1949_____; 1950____;1951____;1952_____;1953_____.

5. What is the average production per cow on an annual basis? Lbs._____.

Part II. Test

1. Test for 1949:

Date	'	'	'	'	'	'	'	'	'	'	'
Jan.	'	'	'	'	'	'	'	'	'	'	'
					through						
Dec.	'	'	'	'	'	'	'	'	'	'	'

2. What is the minimum number of tests per month you consider adequate? Daily___20___15___12___10___7___5___. Why?_____.

3. Would you consider the same test four times consecutively as an unusual occurrence? Yes___,No___. Why?_____.

4. To what do you attribute changes from one test to another? Note:_____.

5. Within a month on the average, how much variation would you expect?_____ _____.

6. What is your opinion of the present testing program? Note:_____.

7. What changes have occurred on average B.F. test of your herd?

   (a)Decreased____,Why?_____

   (b)Increased____,Why?_____

8. The price of 4% milk is lowered about 8 cents per cwt. for each 1/10 test point below 4%. (The same increase in price for milk above 4%.)

   A. What changes would you make if only 5 cents per cwt. were deducted per 1/10 test point below 4%? Note:_____.

B. What changes would you make if as much as 12 cents per cwt. were deducted per 1/10 test point below 4%? Note:_____.

Part III. Price

1. How long have you been in the dairy business?_____. Is this the most important enterprise on your farm? Yes_____,No_____.
2. What enterprise is your next best alternative?——.
3. How cheap can you produce milk and still stay in the dairy business?_____.
4. (a) Present breed of bull_____;cows_____
   (b) Have you changed type of bull; Yes___,No_____.
   (c) Change: Dairy_____,beef_____type.
   (d) Has the make-up of your herd changed?Yes__No__.
   (e) Change_____. Note:_____ _____
5. Have you completed all changes in organization and production that you would make for present dairy price cost relationships? Yes___,No_____.
   If no, (a) direction of change to be made:_____.
   (b) size or amount of changes:_____.
6.

Okla. Farm	Price of Milk		
	$4.00	$5.00	$6.00
$14.00			
$16.50			
$20.00			
$25.00			

The present price of beef is about $16.50 and milk

approximately $5.00; have you adjusted your production to these prices? Yes_____,No_____.

(a) How would you adjust your production if the price of beef dropped to $14.00?_____.
increased to $20.00?_____.

(b) Assuming the price of beef to be $16.50, and milk $4.00, how would you adjust?_____.
Milk price remaining at $4.00 and beef dropped to $14.00?_____,increased to $20.
_____.

(c) Assuming the price of beef to be $16.50 and milk $4.00, how would you adjust?_____.
Milk price remaining at $4 and beef increased to $25?_____.

(d) Price of beef at $16.50 and milk at $6.00.
how would you adjust production?_____.
beef dropped $2.50_____.
increased $3.50?_____ _____.
increased $8.50?_____.

Part IV. Seasonality

1. The price in the Fall is usually higher than the price in the Spring. How much higher must this fall price be to make it profitable for you to produce as much milk in October, November, and December as you now produce in April, May and June?
Note:_____.

2. What are the major costs in this price difference?

3. Share of feed:

   Grown_____Purchased_____.

4. What season of the year do you buy most of your feed?_____.

5. Why do you have a feed shortage at this time of year?_____.

6. Proportion of labor:

   Family_____Purchased_____.

7. Do you feel that the base surplus plan has been a fair way of pricing milk for the months of largest production? Yes_____,No_____. Note:_____.

Part V. Milk Order

Advantages of Order, most important first:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Disadvantages:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

VITA

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