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Milk Production Costs and Milk Prices

R. M. GREEN, D. C. WOOD, A. C. RAGSDALE

In December, 1917, the University of Missouri College of Agriculture thru its Farm Management Department began an investigation of milk production costs for the previous year in the vicinity of St. Louis, Mo. Later, with the assistance of the Agricultural Extension Service in Farm Management and Dairy Husbandry, similar information was secured from territory supplying milk to St. Joseph and Kansas City, Mo.

The purpose of this investigation was to secure as accurate information as possible on the relative cost and price of milk from representative farms in different sections, and thru cooperation with the Agricultural Extension Service in Farm Management and Dairy Husbandry, to demonstrate the present business status of dairying in the sections studied, the pressing importance of the most economical production possible through careful feeding and selection, and the value to the farmer of keeping informed on the business side of his operations as a means of foreseeing and, to some extent, avoiding in the most practical way serious losses.

It was realized in beginning this investigation that figures on the cost of producing milk like other cost figures are not static but change from time to time. However, it is believed that the information secured is representative enough and recent enough to serve as a guide in interpreting conditions locally in this business now and in the near future. As the cost figures obtained were nearly all in terms of quantity of feed and labor as well as in terms of dollars and cents, the application of new prices to the quantity figures secured will furnish information approximately correct for changing conditions.

Figure 1 shows approximately the location of farms included in this investigation. Each dot represents a farm.

ST. LOUIS AREA

Production costs, December 1, 1916, to December 1, 1917

During this investigation information was secured from 49 representative milk producers near the City of St. Louis. These men were located in St. Louis, Jefferson, Franklin, and St. Charles

counties. The records were secured by the specialist conducting this work after careful investigation at the farm. Where possible, information was obtained from written records. Many of the farmers were able to produce some such records in the form of day book accounts and memoranda. No attempt was made to select particular farms. However, only farms with ten cows or more were visited, since records from farms with smaller herds would contribute very little toward determining production costs.

In fairness to both the consuming public and the farmers the compilation is not based upon the poorest herds nor upon only the highest grade and purebred herds, but an endeavor was made to secure records from all herds alike so that the results would be representative of the true conditions in this district.

Of the 49 farms represented in this investigation, 3 kept all purebred Holsteins, 25 kept grade Holsteins with some purebreds, 1 kept all purebred Jerseys, 3 kept grade Jerseys, and 17 kept mixed herds or common grade stock. All but 3 kept their own bull.

The average size of farm was 167.9 acres, and the average distance from the local market was 1.29 miles.

The average value of cows in these herds was \$107 per head, and the average production, 625.6 gallons per cow per year.

RESULTS OF THE INVESTIGATION

In Table 1 is given an itemized summary of the costs of producing milk by the 49 dairymen interviewed.

TABLE 1.—MILK PRODUCTION COSTS FROM FORTY-NINE DAIRYMEN NEAR ST. LOUIS

Expenses	Amount	Price	Total
Feed			
Corn	13,235 bu	\$ 1.22	\$ 16,178.50
Bran	313.84 tons	35.94	11,280.92
Cottonseed meal	97.6 tons	38.94	3,800.48
Other concentrates	260.11 tons	38.64	10,051.47
Legume hay	1,610 tons	23.63	38,052.00
Non-legume roughage	126.75 tons	9.67	1,225.50
Fodder	6,875 shocks	.363	2,496.84
Silage	3,595.5 tons	8.56	30,767.50
Pasture .....	.....	.....	10,808.75
Total feeds .....	.....	.....	124,661.96
Miscellaneous			
Cattle purchased	296 head	95.81	28,361.60

TABLE 1.—MILK PRODUCTION COSTS FROM FORTY-NINE DAIRYMEN NEAR ST. LOUIS—CONTINUED

Expenses	Amount	Price	Total
Cattle died	48 head	.....	3,690.00
Veterinary fees .....	.....	.....	1,137.50
Breeding fees (pd.) .....	.....	.....	44.00
Bedding used	309.5 tons	7.63	2,361.50
Interest on cattle .....	.....	.....	7,823.67
Taxes and ins., cattle .....	.....	.....	929.80
Taxes and interest on real estate (bldg.) .....	.....	.....	5,444.16
Rent .....	.....	.....	476.00
Insurance on real estate (bldgs.) .....	.....	.....	543.25
Taxes and interest on equipment .....	.....	.....	865.53
Repairs, buildings .....	.....	.....	706.00
Repairs, equipment .....	.....	.....	126.00
Depreciation on real estate .....	.....	.....	4,066.10
Depreciation on equipment .....	.....	.....	1,750.35
Ice .....	.....	.....	1,769.00
Hauling milk (paid) .....	.....	.....	99.45
Feed grinding	10,272.7 bu.	.114	1,176.20
Power and fuel .....	.....	.....	2,933.00
Salt and stock food .....	.....	.....	513.89
Fees and dues .....	.....	.....	71.15
Express .....	.....	.....	11,456.29
Miscellaneous .....	.....	.....	1,318.19
Total miscellaneous .....	.....	.....	77,662.63
Labor			
Man labor	215,983.36 hrs.	.....	40,305.69
Horse labor	126,770.9 "	.....	15,936.32
Total labor .....	.....	.....	56,242.01
Summary of costs			
Feed cost .....	.....	.....	124,661.96
Miscellaneous cost .....	.....	.....	77,662.63
Labor cost .....	.....	.....	56,242.01
Total costs .....	.....	.....	258,566.60
Credits	Amount	Price	Total
Manure	6,536 $\frac{3}{4}$ tons	\$ 1.29	8,412.00
Cattle sold	758 head	38.73	29,356.97
Feed sacks sold .....	.....	.....	527.75
Hides sold	25	.....	204.44
Increase on inventory .....	.....	.....	29,398.30
Total credits .....	.....	.....	68,439.46
Net cost (total expenditures less credits) .....	.....	.....	190,127.14
10% of net cost for managerial ability and risk .....	.....	.....	19,012.71
Total net cost of production .....	.....	.....	258,566.60

SUMMARY OF DATA FROM A TOTAL OF 1045 COWS, 305 HEIFERS, 211 CALVES,
46 BULLS (1296 CATTLE UNITS)

Production	653,728.11 gals.
Average cost per gallon	31.99 cts.
Average price received per gallon	25.36 cts.
Loss per gallon	6.63 cts.
Production	5,622,061.75 lbs.
Average cost per 100 lbs	\$ 3.72
Average price received per 100 lbs.	\$ 2.95
Loss per 100 lbs.	77.00 cts.
Annual production per cow	625.6 gals.
Average herd consisted of 21.3 cows, 6.2 heifers, 4.3 calves, .94 bulls.	

The total annual production of these 49 herds was 653,728.11 gallons. The cost of production was \$209,139.85. The average cost per gallon per year therefore amounted to 31.99 cents, or \$3.72 per hundred pounds. The average price per gallon received during the year was 25.36 cents or \$2.95 per hundred pounds, which resulted in a net loss of 6.63 cents per gallon or 77 cents a hundred pounds.

The figures quoted are on the basis of the working herd and not on the basis of the milk cows alone. The data were figured on this basis for several reasons. In the first place it was possible to get a fairly accurate record of total feed fed to the working herd, but as all cattle were fed a number of feeds together, it was difficult for the farmers interviewed to estimate the portion chargeable to cows alone. A more important reason than this is the fact that the part of the working herd in addition to milk cows is a necessary part of the business and it would usually be impracticable for the farmer to figure on being without that part of his herd. It was, therefore, considered more compatible with actual conditions to figure on the working herd as a unit.

All feed produced on the farm was charged at market prices minus the cost of hauling. Feed bought was charged at actual purchase price. The cost of hauling to the farm was included under labor. It will be noticed (Table 1) that these 49 dairymen fed a total of 13,235 bushels of corn, 313.84 tons of bran, 97.6 tons of cottonseed meal, 260.11 tons of other concentrates, 1610 tons of legume hay, 126.75 tons of non-leguminous roughage, in addition to 6875 shocks of fodder, 3595.5 tons silage, and \$10,808.75 worth of pasture. With corn at \$1.22 a bushel, bran at \$35.94 a ton, cottonseed meal at \$38.94 a ton, other concentrates \$38.64 a ton, legume hay \$23.63 a ton, miscellaneous roughage \$9.67 a ton, fodder 36 cents

a shock, and silage \$8.56 a ton, the total feed cost of producing the 653,728.11 gallons of milk was \$124,661.96.

The man labor and horse labor recorded is that used solely in connection with the dairy. It consists of such work as milking, chores and feeding, hauling milk, hauling feed and bedding, and handling the milk. Its total cost was \$56,242.01.

Miscellaneous costs amounted to \$77,662.63. Among the most important of these were taxes, interest, and depreciation, bedding, loss of cattle, power and fuel, feed grinding and express. Interest on investment was figured at 5 per cent. Depreciation was figured at 10 per cent for equipment, 4 per cent for frame buildings and 3 per cent for stone or brick buildings. The 309.5 tons of bedding valued at \$2,361.50 was chiefly straw, altho a few men bedded with waste stover and a few did not bed at all. Forty-eight head of stock were lost during the year, and the \$3,690.00 charged as a cost is the amount not covered by insurance. The charge of \$2,933.00 for power and fuel covers everything paid out for gasoline, oil and batteries for gas engines, and also fuel for heating and for sterilizing utensils. The 10,252 bushels of grain ground was practically all corn. The shipping charges were \$11,456.29. This was express from the local station to St. Louis. On most of the milk shipped the express rate was 1½ to 2 cents per gallon.

The charges on real estate and equipment refer only to charges on dairy buildings and dairy equipment. The item of rent, \$476, is made up of rent paid on buildings by a few dairymen who did not own their plants and takes the place of taxes and interest on owned buildings. There is also included under miscellaneous costs an item of \$99.45 for milk hauling. One or two farmers hired some extra hauling done other than that charged under labor.

Under credits the manure recorded is that produced and actually used rather than the total production of manure. In addition to other costs, 10 per cent of other net costs was added to cover managerial ability and risk. The herds on which these figures are based average 21.3 cows, 6.2 heifers, 4.3 calves, and one bull per herd. The cost of 31.99 cents per gallon included express and was therefore the cost F. O. B., St. Louis, or delivered to the distributor. The cost was figured on this basis—including express—so that it would be comparable with the price received which is F. O. B., St. Louis.

Included among the 49 dairymen whose records were secured were nine dairymen who delivered their milk to customers in small towns nearby. That there might be no question as to how these nine

records influenced the final results shown in Table 1, the figures from these nine farms were separated and are shown in Table 2.

TABLE 2.—MILK PRODUCTION COSTS FROM NINE DAIRYMEN WHO SUPPLIED LOCAL MARKETS

Expenditures	Amount	Price	Total
Feed			
Corn	1,510 bu.	\$ 1.23	\$1,856.85
Bran	76.3 tons	34.96	2,667.60
Cottonseed meal	3.0 tons	33.33	100.00
Other concentrates	42.71 tons	39.31	1,678.85
Legume hay	333.5 tons	19.89	6,633.00
Non-legume hay	22.0 tons	5.22	115.00
Fodder	1400 shocks	.3607	505.00
Silage	205 tons	9.19	1,885.00
Pasture .....	.....	.....	1,832.00
Total feed .....	.....	.....	17,273.30
Miscellaneous			
Cattle purchased	43 head	84.23	3,622.00
Cattle died	2 head	100.00	200.00
Veterinary fees .....	.....	.....	154.00
Breeding fees .....	.....	.....	4.00
Bedding	41¼ tons	7.51	310.00
Interest on cattle .....	.....	.....	1,035.16
Taxes and interest on cattle.....	.....	.....	110.75
Taxes and interest on real estate (bldg.) .....	.....	.....	589.75
Insurance on real estate (bldg.).....	.....	.....	68.50
Taxes and interest on equipment.....	.....	.....	124.09
Repairs on buildings and equipment .....	.....	.....	29.50
Depreciation on real estate .....	.....	.....	448.40
Depreciation on equipment .....	.....	.....	218.23
Rent .....	.....	.....	43.00
Ice .....	.....	.....	197.00
Feed grinding	2,102.85 bu.	.11	232.20
Power and fuel .....	.....	.....	127.00
Salt and stock food .....	.....	.....	130.70
Fees and dues .....	.....	.....	19.25
Express .....	.....	.....	26.20
Miscellaneous .....	.....	.....	544.00
Total miscellaneous .....	.....	.....	\$8,233.73
Labor			
Man labor	24,022.5 hrs.	.17	4,083.83
Horse labor	7,993.0 hrs.	.12½	999.13
Total labor .....	.....	.....	5,082.96
Man labor (delivery)	20,674.5 hrs.	.17	3,514.67
Horse labor (delivery)	23,959.5 hrs.	.12½	2,994.94
Total cost of delivery (labor).....	.....	.....	6,509.61

TABLE 2.—MILK PRODUCTION COSTS FROM NINE DAIRYMEN WHO SUPPLIED LOCAL MARKETS—CONTINUED

Expenditures	Amount	Price	Total
Summary of Expenditures			
Feed cost .....	.....	.....	17,273.30
Miscellaneous cost .....	.....	.....	8,233.73
Labor cost .....	.....	.....	5,082.96
Delivery cost (labor) .....	.....	.....	6,509.61
Total cost .....	.....	.....	37,099.60
Credits	Amount	Price	Total
Manure	1,905 tons	1.41	2,693.75
Cattle sold	116 head	41.13	4,772.00
Feed sacks .....	.....	.....	31.00
Hides sold	2	11.50	23.00
Increase in investment .....	.....	.....	4,060.00
Total credits .....	.....	.....	11,579.75
Net cost (total expenditures less credits) .....	.....	.....	25,519.85
10% net cost for managerial ability and risk .....	.....	.....	2,551.98
Total net cost of production .....	.....	.....	28,071.83

SUMMARY OF DATA FROM A TOTAL OF 141 COWS, 38 HEIFERS, 26½ CALVES, 9 BULLS (175.5 CATTLE UNITS)

Production	84,359.05 gals.
Average cost per gallon	33.27 cts.
Average price received per gallon	29.93 cts.
Loss per gallon	3.34 cts.
Production	725,487.8 lbs.
Average cost per 100 lbs.	\$ 3.87
Average price received per 100 lbs.	\$ 3.48
Loss per 100 lbs. ....	.39
Annual production per cow	598 gals.
Average herd—15.6 cows, 4.2 heifers, 2.9 calves, 1 bull.	

The total production of these nine dairies was 84,359.05 gallons. By dividing this into the net cost of production, the average cost of production per gallon for these farmers was found to be 33.27 cents or \$3.87 a hundred. However, these men were receiving an average price of 29.93 cents per gallon, or \$3.48 per hundred. The loss per gallon was, therefore, 3.34 cents, or 39 cents a hundred. These figures are not quoted to show the comparative profit between shipping and delivering milk, altho they are in accord with findings on this subject in the other localities studied. Nine records are too few on which to base conclusions. They are separated from the others to

make clear the effect of including them in Table 1. The herds owned by these farmers averaged 15.6 cows, 4.2 heifers, 2.9 calves, and one bull. The average production was 598 gallons per cow per year.

TABLE 3.—MILK PRODUCTION COSTS FROM FORTY DAIRYMEN WHO SOLD MILK
F. O. B. ST. LOUIS

Expenditures	Amount	Price	Total
Feed			
Corn	11,725 bu.	\$ 1.22	\$14,321.65
Bran	237.54 tons	36.26	8,613.32
Cottonseed meal	94.6 tons	39.12	3,700.48
Other concentrates	217.4 tons	38.51	8,372.62
Legume hay	1,276.5 tons	24.61	31,419.00
Non-legume roughage	104.75 tons	10.60	1,110.50
Fodder	5,475 shocks	.364	1,991.84
Silage	3,390.5 tons	8.52	28,882.50
Pasture			8,976.75
Total feed			\$107,388.66
Miscellaneous			
Cattle purchased	253 head	97.78	24,739.60
Cattle died	46 head	75.87	3,490.00
Veterinary fees			983.50
Breeding fees			40.00
Bedding	268.25 tons	7.65	2,051.50
Interest on cattle			6,788.51
Taxes and insurance on cattle			819.05
Taxes & interest on real estate (bldgs.)			4,854.41
Insurance on real estate (bldgs.)			474.75
Taxes and interest on equipment			741.44
Repairs on buildings and equipment			802.50
Depreciation on real estate			3,617.70
Depreciation on equipment			1,532.12
Rent			433.00
Ice			1,572.00
Hauling milk			99.45
Feed grinding	8,149.85 bu.	.115	944.00
Power and fuel			2,806.00
Salt and stock feed			383.19
Fees and dues			51.90
Express			11,430.09
Miscellaneous			774.19
Total miscellaneous			69,428.90
Labor			
Man labor	171,286.36 hrs.		32,707.19
Horse labor	94,818.4 hrs.		11,942.25
Total labor			44,649.44

TABLE 3.—MILK PRODUCTION COSTS FROM FORTY DAIRYMEN WHO SOLD MILK
F. O. B. ST. LOUIS—CONTINUED

Expenditures	Amount	Price	Total
Summary of expenditures			
Feed cost .....	.....	.....	107,388.66
Miscellaneous cost .....	.....	.....	69,428.90
Labor cost .....	.....	.....	44,649.44
Total cost .....	.....	.....	\$221,467.00
Credits			
Manure	4,631.25 tons	1.23	5,718.25
Cattle sold	642	.....	24,584.97
Feed sacks sold .....	.....	.....	496.75
Hides sold	23	7.89	181.44
Increase in inventory .....	.....	.....	25,878.30
Total credits .....	.....	.....	56,859.71
Net cost .....	.....	.....	164,607.29
10% net cost for managerial ability and risk .....	.....	.....	16,460.73
Total net cost of production.....	.....	.....	181,068.02

SUMMARY OF DATA ON TOTAL OF 904 COWS, 267 HEIFERS, 184.2 CALVES, 37 BULLS
(1120.5 CATTLE UNITS)

Production	569,369.06 gals.
Average cost per gallon	31.80 cts.
Average price received per gallon	24.68 cts.
Loss per gallon	7.12 cts.
Production	4,896,573.95 lbs.
Average cost per 100 lbs.	\$ 3.70
Average price received per 100 lbs.	\$ 2.87
Loss per 100 lbs. ....	.83
Annual production per cow	630 gals.
Average herd—22.6 cows, 6.7 heifers, 4.6 calves, .93 bulls.	

Table 3 includes figures for the forty dairymen who shipped milk. The total production of this group of farms was 569,369.06 gallons. The average cost per gallon was 31.8 cents or \$3.70 a hundred. It will be seen that including the nine dairymen who delivered milk with the forty who shipped, as was done in Table 1, did not materially affect the final results as the nine were only a small proportion of the total number of farms studied. The average price received by the 40 farmers shipping milk was 24.68 cents per gallon, or 2.87 a hundred pounds. This gave a loss of 7.12 cents a gallon or 83 cents a hundred pounds. The herds on these farms averaged 22.6 cows, 6.7 heifers, 4.6 calves, and 9 bulls. Only three

farmers out of the total number did not keep their own bull. The average production was 630 gallons per cow per year.

In Table 4 is given an itemized statement, on the basis of one gallon, of the costs recorded in Table 1.

TABLE 4.—PRODUCTION COST PER GALLON OF MILK

	Amount	Value
Feed cost		
Corn	1.4 lbs.	\$ 0.025
Bran	0.96 lbs.	0.017
Cottonseed meal	0.3 lbs.	0.006
Other concentrates	0.8 lbs.	0.016
Legume hay	4.9 lbs.	0.059
Non-legume hay	0.39 lbs.	0.002
Fodder		0.004
Silage	11.0 lbs.	0.048
Pasture		0.017
Total feed		0.194
Miscellaneous cost		0.119
Labor		
Man labor	0.33 hr.	0.062
Horse labor	0.19 hr.	0.024
Total labor		0.086
Total gross cost		0.399
Credits		0.08
Total net cost per gallon.....		0.319

The calculation of annual costs per cow (Table 5) involves some estimating. The figures presented were derived from the figures on the whole herd by reducing all animals in the herd to the basis of an animal unit or one cow. In determining the number of animal units or cow equivalents in the herd, 2 heifers, 4 calves, or 1 bull were counted equivalent to one cow. That this method of calculation gives practically the same cost figures as those previously determined is shown by comparing the cost per gallon determined in this way with the cost per gallon found in Table 1. Considerable data for other states have been presented on the basis per cow. Table 5 is included in this discussion so that the data presented may be compared with that collected elsewhere in this form.

TABLE 5.—ANNUAL COST PER COW

	Amount	Price	Total
Feed cost			
Corn	10.21 bu.	\$ 1.22	\$ 12.46
Bran	484.2 lbs.	35.84 per T.	8.74
Cottonseed meal	150.58 lbs.	38.94 per T.	2.93
Other concentrates	401.22 lbs.	38.64 per T.	7.75
Legume hay	1.24 tons	23.63 per T.	29.35
Non-legume roughage .....	.098 tons	9.67 per T.	.945
Fodder	5.303 shks	.363 per shk.	1.925
Silage	2.773 tons	8.56 per T.	23.74
Pasture			8.33
Total feed cost			96.17
Man labor			
Milking and feeding	97 hrs.		
Handling milk	17.4 hrs.		
Hauling milk	32.2 hrs.		
Misc. dairy work	20.0 hrs.		
Total man labor	166.6 hrs.		31.10
Horse labor			
Handling milk	12.4 hrs.		
Hauling milk	44.9 hrs.		
Misc. dairy work	40.4 hrs.		
Total horse labor	97.7 hrs.		12.29
Total labor cost			43.39
Miscellaneous costs			
Depreciation, 12%		12.86	
Interest on cows, 6%, (value \$107.21)		6.43	
Bedding		1.82	
Veterinary .....		.88	
Use of buildings		8.68	
Use of equipment		2.12	
Ice		1.36	
Feed grinding .....		.91	
Power and fuel		2.26	
Salt and stock food .....		.40	
Bull service		2.00	
Misc. expenses, express, etc.		10.71	
Total miscellaneous costs			\$ 50.43
Summary of costs			
Feed cost			\$ 96.17
Labor cost			43.39
Miscellaneous cost			50.43
Gross costs			\$189.99
10% for managerial ability, risk, and miscellaneous overhead			19.00
Total gross costs			\$208.99

TABLE 5.—ANNUAL COST PER COW—CONTINUED

	Amount	Price	Total
Credits			
Manure	5.042 tons	.....	6.49
Calf .....	.....	.....	5.00
Feed sacks .....	.....	.....	.46
Hides .....	.....	.....	.18
Total credits .....	.....	.....	\$ 12.13
Net Cost .....	.....	.....	\$196.86
Cost per gallon .....	.....	31.47	.....
Gallons per cow .....	.....	625.58	.....

ST. JOSEPH AREA

Production costs from January 1, 1917, to January 1, 1918

Records were secured on 23 farms in this section. Practically all of the records are from Buchanan county. The same plan of securing records was followed as in the St. Louis area. Of the 23 records obtained in this region 10 were from producers who retailed their own milk, while 13 were from producers who sold to distributors.

RESULTS OF THE INVESTIGATION

The composite costs for all 23 farms are summarized in Table 6. Tables 7 and 8 give costs for the two groups separately.

TABLE 6.—MILK PRODUCTION COSTS FROM TWENTY-THREE DAIRYMEN NEAR ST. JOSEPH

Expenditures	Amount	Price	Total
Feed			
Corn	12,107 bu.	\$ 1.53	18,494.31
Bran	210¼ tons	36.87	7,752.20
Cottonseed meal	69½ tons	49.72	3,455.75
Malt	1,188 tons	6.24	7,416.00
Beet pulp	38½ tons	40.99	1,578.00
Oats	72.45 tons	41.03	2,973.00
Oil meal	22.05 tons	59.77	1,317.95
Hominy	50¾ tons	58.84	2,956.75
Other concentrates	69¾ tons	34.54	2,409.35
Legume hay	1,629 tons	22.48	36,620.28
Non-legume roughage	262 tons	18.40	4,840.00
Fodder	951 shocks	0.30	285.30
Silage	1,845 tons	8.22	15,175.00
Pasture .....	.....	.....	9,535.00
Total feed .....	.....	.....	114,808.89

TABLE 6.—MILK PRODUCTION COSTS FROM TWENTY-THREE DAIRYMEN NEAR ST. JOSEPH—CONTINUED

	Amount	Price	Total
Miscellaneous			
Cattle purchased	113 head	100.60	11,372.00
Cattle died	72 head	.....	2,141.00
Veterinary .....	.....	.....	794.00
Bedding .....	.....	.....	2,272.00
Interest on cattle .....	.....	.....	6,562.23
Tax & insurance on cattle.....	.....	.....	657.30
Tax & interest on real estate.....	.....	.....	2,254.76
Insurance on real estate .....	.....	.....	144.75
Taxes & interest on equipment.....	.....	.....	1,146.74
Real estate repairs .....	.....	.....	519.50
Repairs on equipment .....	.....	.....	1,159.50
Depreciation on real estate.....	.....	.....	1,044.25
Depreciation on equipment .....	.....	.....	1,226.32
Ice .....	.....	.....	3,266.00
Feed grinding .....	.....	.....	646.00
Power & fuel .....	.....	.....	2,899.00
Salt & stock food .....	.....	.....	341.25
Fees & dues .....	.....	.....	26.50
Testing .....	.....	.....	922.50
Decreased cattle Inv. ....	.....	.....	4,401.50
Miscellaneous items .....	.....	.....	800.00
Total miscellaneous .....	.....	.....	44,597.10
Labor			
Man labor	233,805 hrs.	0.175	41,048.94
Horse labor	132,330 hrs.	0.125	16,541.25
Total labor .....	.....	.....	57,690.93
Summary of costs			
Feed cost .....	.....	.....	114,808.89
Miscellaneous cost .....	.....	.....	44,597.10
Labor cost .....	.....	.....	57,690.93
Total cost .....	.....	.....	217,096.92
Credits	Amount	Price	Total
Manure produced	4,416 tons	1.45	6,413.50
Cattle sold	813 head	48.37	39,329.27
Feed sacks sold .....	.....	.....	360.80
Hides sold	14	11.07	155.05
Total credits .....	.....	.....	46,258.62
Net cost (total expenditures less credits)	.....	.....	170,838.30
10% net cost for managerial ability and risk .....	.....	.....	17,083.83
Total net cost for production.....	.....	.....	\$187,922.13

SUMMARY OF DATA ON A TOTAL OF 749 COWS, 194.5 HEIFERS, 169.5 CALVES,
28 BULLS (917.1 CATTLE UNITS)

Production	530,105	gals.
Average cost per gallon	35.42	cts.
Average price received per gallon	31.79	cts.
Loss per gallon	3.63	cts.
Production	4,558,903	lbs.
Average cost per 100 lbs	\$ 4.12	
Average price received per 100 lbs	\$ 3.70	
Loss per 100 lbs.	\$.42	
Annual Production per cow	710	gals.
Average herd consisted of 32.56 cows, 8.45 heifers, 7.37 calves, 1.24 bulls.		

TABLE 7.—MILK PRODUCTION COSTS FROM TEN DAIRYMEN WHO SUPPLIED LOCAL MARKETS

Expenditures	Amount	Price	Total
Feed			
Corn	4,749 bu.	\$ 1.63	\$7,730.00
Bran	106 $\frac{1}{4}$ tons	35.93	3,818.00
Cottonseed meal	28 tons	48.86	1,368.00
Malt	843 tons	5.86	4,938.00
Beet pulp	14 tons	41.43	580.00
Oats	44 $\frac{1}{4}$ tons	41.49	1,836.00
Oil meal	8 tons	59.19	473.50
Hominy	44 tons	59.09	2,600.00
Other concentrates	37 $\frac{3}{4}$ tons	41.79	1,577.50
Legume hay	762 tons	23.03	17,552.00
Non-legume roughage	237 tons	19.25	4,562.00
Fodder	176 shocks	0.30	52.80
Silage	770 tons	8.57	6,600.00
Pasture			4,122.00
Total feed			57,809.80
Miscellaneous			
Cattle purchased	47	102.89	4,836.00
Cattle died	32		1,470.00
Veterinary			310.50
Bedding	90 tons		1,111.00
Interest on cattle			3,709.54
Taxes and insurance on cattle.....			311.00
Taxes and interest on real estate....			860.55
Insurance on real estate			76.25
Tax and interest on equipment.....			668.00
Real estate repairs			308.00
Repairs on equipment			758.95
Depreciation on real estate.....			408.50
Depreciation on equipment			628.92
Ice			1,511.00

TABLE 7.—MILK PRODUCTION COSTS FROM TEN DAIRYMEN WHO SUPPLIED LOCAL MARKETS—CONTINUED

Expenditures	Amount	Price	Total
Feed grinding			32.00
Power & fuel			1,180.00
Salt & stock foods			156.75
Fees and dues			20.50
Miscellaneous			730.00
Testing			641.00
Total miscellaneous			\$ 19,728.46
Labor			
Man labor	122,290 hrs.	0.177	21,645.33
Horse labor	86,870 hrs.	0.125	10,858.75
Total labor			\$ 32,504.08
Summary of expenditures			
Feed cost			57,809.80
Misc. cost			19,728.46
Labor cost			32,504.08
Total cost			\$110,042.34
Credits	Amount	Price	Total
Manure produced	2,241 tons		2,608.50
Cattle sold	306 head		15,449.00
Feed sacks sold			281.80
Hides sold	4	16.37	65.50
Increase on inventory			2,741.00
Total credits			\$ 21,145.80
Net cost (total expenditures less credits)			88,896.54
10% of net cost for managerial ability, and risk			8,889.65
Total net cost of production.....			\$ 97,786.19

SUMMARY OF DATA ON A TOTAL OF 358 COWS, 100.5 HEIFERS, 85.5 CALVES,
12.5 BULLS (442.1 CATTLE UNITS)

Production	257,712 gals.
Average cost per gallon	37.94 cts.
Average price received per gallon	43.43 cts.
Profit per gallon	5.49 cts.
Production	2,216,323.2 lbs.
Average cost per 100 lbs.	\$ 4.41
Average price received per 100 lbs.	\$ 5.05
Profit per 100 lbs.	\$.64
Annual production per cow	719.9 gals.
Average herd consisted of 35.8 cows, 10.05 heifers, 8.55 calves, 1.25 bulls.	

TABLE 8.—MILK PRODUCTION COSTS FROM THIRTEEN DAIRYMEN WHO SOLD MILK AT WHOLESALE

Expenditures	Amount	Price	Total
Feed			
Corn	7,358 bu.	\$ 1.46	10,764.31
Bran	104 tons	37.83	3,934.20
Cottonseed meal	41½ tons	50.30	2,087.75
Malt	354 tons	7.00	2,478.00
Beet pulp	24½ tons	40.73	998.00
Oats	28.2 tons	40.31	1,137.00
Oil meal	14.05 tons	60.10	844.45
Hominy	6.25 tons	57.08	356.75
Other concentrates	32 tons	26.00	831.85
Legume hay	867 tons	21.99	19,068.28
Non-legume hay.....	25 tons	11.12	278.00
Fodder	775 shocks	0.30	232.50
Silage	1.075 tons	7.97	8,575.00
Pasture			5,413.00
Total feed			56,999.09
Miscellaneous			
Cattle purchased	66	99.03	6,536.00
Cattle died	40		671.00
Veterinary			483.50
Bedding	60 tons		1,161.00
Interest on cattle			2,852.69
Taxes & insurance on cattle.....			346.30
Taxes & interest on real estate (bldgs.)			1,394.21
Insurance on real estate (bldgs.)...			68.50
Taxes & interest on equipment.....			478.74
Real estate repairs (bldgs.).....			211.50
Repairs on equipment			400.55
Depreciation on real estate.....			635.75
Depreciation on equipment.....			597.40
Ice			1,755.00
Feed grinding			614.00
Power & fuel			1,719.00
Salt & stock food			184.50
Fees & dues			6.00
Testing			281.50
Decreased cattle Inv.			7,142.50
Miscellaneous			70.00
Total miscellaneous			27,609.64
Labor			
Man labor	111,515 hrs.	0.174	19,403.61
Horse labor	45,460 hrs.	0.125	5,682.50
Total labor			25,086.11

TABLE 8.—MILK PRODUCTION COSTS FROM THIRTEEN DAIRYMEN WHO SOLD MILK AT WHOLESALE—CONTINUED

Expenditures	Amount	Price	Total
Summary of expenditures			
Feed cost .....	.....	.....	56,999.09
Miscellaneous cost .....	.....	.....	27,609.64
Labor cost .....	.....	.....	25,086.11
Total cost .....	.....	.....	109,694.84
Credits			
Manure produced	2,175 tons	1.75	3,805.00
Cattle sold	507	47.10	23,880.27
Feed sacks sold .....	.....	.....	79.00
Hides sold	10	8.955	89.55
Total credits .....	.....	.....	27,853.82
Net cost .....	.....	.....	81,841.02
10% net cost for managerial ability, and risk .....	.....	.....	8,184.10
Total net cost of production.....	.....	.....	90,025.12

SUMMARY OF DATA ON A TOTAL OF 391 COWS, 94 HEIFERS, 84 CALVES, 16 BULLS,
(475 CATTLE UNITS)

Production	272,393.	gals.
Average cost per gallon	33.05	cts.
Average price received per gallon	20.69	cts.
Loss per gallon	12.36	cts.
Production	2,342,579.8	lbs.
Average cost per 100 lbs	\$ 3.84	
Average price received per 100 lbs.	\$ 2.41	
Loss per 100 lbs.	\$ 1.43	
Annual production per cow	696.7	gals.
Average herd consisted of 30.07 cows, 7.23 heifers, 6.46 calves, 1.23 bulls.		

One of the 23 farms in this section kept all purebred Holsteins, 11 kept grade Holsteins with some purebreds, 2 kept all purebred Jerseys, 2 kept grade Jerseys, and 7 kept mixed herds or common grade stock. All kept their own bulls.

The average size of farm was 96.8 acres and the average distance from market 2.3 miles.

The average value per cow was \$139, and the average production was 710 gallons per cow per year.

Reference to Table 6 will show that the combined herds of the 23 farms produced 530,105 gallons of milk at a net cost of \$187,922.13. This made the average cost per gallon, 35.42 cents.

The average price received per gallon was 31.79 cents, which left a net loss of 3.63 cents per gallon.

The method of figuring feed costs and certain of the overhead expenses listed under miscellaneous costs is the same as that described in connection with the St. Louis data. The costs for this area were also based on the entire working herd.

None of the dairymen included in the study of this area shipped his milk by express. Those who sold to distributors either hauled their milk direct to a local creamery or sold to neighboring dairymen who bought additional milk to distribute with their own.

The ten dairymen who retailed their milk secured a combined output of 257,712 gallons at a net production cost of \$97,786.19. This gave an average cost of 37.94 cents per gallon for milk produced and retailed. The average price received per gallon was 43.43 cents which left a net profit of 5.49 cents per gallon. The average size of farm in the case of these retailers was 73.1 acres; the average distance from market 3.48 miles, the average value of milk cows \$156 per head and the average production per cow per year, was 719.9 gallons.

The 13 dairymen producing milk and selling to distributors (Table 8) produced a total of 272,393 gallons of milk at a total net cost of \$90,025.12. These farms were, therefore, producing milk at an average cost of 33.05 cents per gallon. The average price received per gallon by this group was 20.69 cents, which left a net loss of 12.36 cents per gallon. The average size of farm operated by those dairymen who sold wholesale was 116.8 acres, the average distance to market was 4.21 miles, the average value of milk cows was \$112 per head, and the average annual production per cow was 696.7 gallons.

In Table 9 is given an itemized statement of costs per gallon of milk produced. These figures are comparable with those given on page 12 for the St. Louis area. The main difference in costs in the two cases is that the dairymen in the St. Joseph area were using more concentrates and legume hay and less silage than those in the St. Louis district. Otherwise production costs per gallon of milk were very near the same for both areas.

TABLE 9.—PRODUCTION COST PER GALLON OF MILK

	Amount	Value
Feed cost		
Corn	1.28 lbs.	0.035
Bran	0.79 lbs.	0.015
Cottonseed meal	0.26 lbs.	0.006
Other concentrates	5.43 lbs.	0.036
Legume hay	6.13 lbs.	\$0.69
Non-legume hay	0.99 lbs.	0.009
Fodder .....	.0018 shock	0.0005
Silage	7.0 lbs.	0.029
Pasture .....	.....	0.018
Total feed .....	.....	0.218
Miscellaneous cost .....	.....	0.116
Labor		
Man labor	0.44 hr.	0.077
Horse labor	0.25 hr.	0.031
Total labor .....	.....	0.108
Total gross cost .....	.....	0.442
Credits .....	.....	0.088
Total net cost per gallon .....	.....	0.354

The annual cost per cow (Table 10) was calculated for this area in the same manner as for the St. Louis area. Costs going to milk cows were determined on the basis of the total number of animal units in the herd. In the calculation, one unit constituted 1 cow, 1 bull, 2 heifers, or 4 calves. Value per cow, and consequently depreciation and interest per cow, as well as production per cow, pertain to the individual and not to the unit. The cost on this basis, as in the St. Louis area, was very close to that obtained by taking the working herd as a basis. Both methods have been shown here for the sake of clearness.

TABLE 10.—ANNUAL COST PER COW

	Amount	Price	Total
Feed cost			
Corn	12.8 bu.	\$1.53	\$ 19.51
Bran	445 lbs.	36.87	8.21
Cottonseed meal	147 lbs.	49.72	3.65
Other concentrates	1.53 tons	.....	19.71
Legume hay	1.72 tons	22.48	38.80
Non-legume hay	0.28 tons	18.40	5.11
Fodder	1 shock	0.30	0.30
Silage	1.95 tons	8.22	16.25
Pasture .....	.....	.....	10.09
Total feed cost .....	.....	.....	121.63

TABLE 10.—ANNUAL COST PER COW—CONTINUED

Expenditures	Amount	Price	Total
Labor			
Man labor	246.5 hrs.	.....	43.50
Horse labor	140 hrs.	.....	17.50
Total labor cost .....	.....	.....	61.00
Miscellaneous costs			
Depreciation, 12% .....	.....	.....	16.68
Interest on cows, 6% (value \$139.00) .....	.....	.....	8.34
Bedding .....	.....	.....	2.41
Veterinary .....	.....	.....	0.79
Use of buildings .....	.....	.....	4.19
Use of equipment .....	.....	.....	3.74
Ice .....	.....	.....	3.46
Feed grinding .....	.....	.....	0.68
Power and fuel .....	.....	.....	3.06
Salt and stock food .....	.....	.....	0.36
Bull service .....	.....	.....	2.00
Miscellaneous expenses .....	.....	.....	2.54
Total miscellaneous cost .....	.....	.....	48.25
Summary of costs			
Feed cost .....	.....	.....	121.63
Labor cost .....	.....	.....	61.00
Miscellaneous cost .....	.....	.....	48.25
Gross costs .....	.....	.....	230.88
10% for managerial ability, risk, etc... ..	.....	.....	23.09
Total gross costs .....	.....	.....	253.97
Credits	Amount	Price	Total
Manure	4.7 tons	.....	6.79
Calf .....	.....	.....	5.00
Feed sacks .....	.....	.....	0.38
Hides .....	.....	.....	0.16
Total credits .....	.....	.....	12.33
Net cost .....	.....	.....	\$ 241.64
Gallons per cow	710	.....	.....
Cost per gallon	34 cents	.....	.....

KANSAS CITY AREA

Production costs January 1, 1917, to January 1, 1918

Records from 29 different farms were obtained in this area. Most of the records are from Jackson and Johnson counties. The product of all the farms except that of the four retailers reaches the Kansas City market either directly or indirectly. The four retailers supply smaller outlying towns and do not retail in Kansas City.

Data for this area are presented in the same general form as that for the two preceding areas. (See Tables 11, 12, 13, 14 and 15.)

RESULTS OF THE INVESTIGATION

The total production (Table 11) of all farms in this area was 526,727 gallons of milk. At a net cost of \$134,352.20 this gave an average cost per gallon of 25.5 cents. The average price received was 23.7 cents per gallon. These farms, therefore, were receiving a price nearly 2 cents a gallon below the cost of production.

TABLE 11.—MILK PRODUCTION COSTS FROM TWENTY-NINE DAIRYMEN NEAR KANSAS CITY

Expenditures	Amount	Price	Total
Feed			
Corn	5,637.2 bu.	.....	\$ 7,092.25
Bran	157.75 tons	.....	5,329.02
Cottonseed meal	93.5 tons	.....	4,122.50
Oats	24.7 tons	.....	988.00
Oil meal	15.45 tons	.....	869.85
Silage	2,746.0 tons	.....	22,105.00
Pasture .....	.....	.....	9,808.00
Legume hay	930.6 tons	.....	18,830.00
Other concentrates .....	.....	.....	8,663.75
Non-legume roughage .....	.....	.....	9,205.00
Miscellaneous .....	.....	.....	1,524.75
Mixed feed .....	.....	.....	674.00
Total feed cost .....	.....	.....	89,212.12
Miscellaneous costs			
Cattle purchased	195	.....	18,919.50
Cattle died .....	.....	.....	1,990.00
Veterinary fees .....	.....	.....	836.00
Breeding fees .....	.....	.....	79.00
Bedding used .....	.....	.....	1,455.30
Interest on cattle .....	.....	.....	5,192.51
Taxes and insurance on cattle.....	.....	.....	712.45
Taxes and interest (bldgs.).....	.....	.....	2,612.35
Insurance (bldgs.) .....	.....	.....	250.50
Taxes and interest (equip.) .....	.....	.....	571.50
Repairs (bldgs.) .....	.....	.....	1,548.50
Repairs (equip.) .....	.....	.....	1,923.10
Depreciation (bldgs.) .....	.....	.....	2,215.70
Depreciation (equip.) .....	.....	.....	1,057.17
Hauling milk .....	.....	.....	1,645.00
Ice .....	.....	.....	1,694.20
Feed grinding .....	.....	.....	20.00

TABLE 11.—MILK PRODUCTION COSTS FROM TWENTY-NINE DAIRYMEN NEAR KANSAS CITY—CONTINUED

Expenditures	Amount	Price	Total
Power and fuel .....	.....	.....	2,602.30
Salt and stock food .....	.....	.....	243.41
Fees and dues .....	.....	.....	209.25
Miscellaneous .....	.....	.....	297.50
Testing .....	.....	.....	612.70
Total miscellaneous costs .....	.....	.....	46,688.13
Labor			
Man labor	197,787 hrs.	.....	34,414.94
Horse labor	67,940 hrs.	.....	8,492.51
Total labor costs .....	.....	.....	42,907.45
Summary of expenditure			
Feed cost .....	.....	.....	89,212.12
Miscellaneous cost .....	.....	.....	46,688.13
Labor cost .....	.....	.....	42,907.45
Total costs .....	.....	.....	178,807.70
Credits	Amount	Price	Total
Increase inventory .....	.....	.....	15,318.60
Manure	6,510 tons	.....	11,847.50
Cattle sold	675	.....	29,092.99
Feed bags sold .....	.....	.....	236.80
Hides sold .....	.....	.....	173.45
Total credits .....	.....	.....	56,669.34
Net cost (total expenditures less credits) .....	.....	.....	122,138.36
10% net cost for managerial ability and risk .....	.....	.....	12,213.84
Total net cost of production.....	.....	.....	134,352.20

SUMMARY OF DATA ON A TOTAL OF 780 COWS, 223 HEIFERS, 261 CALVES, 37.5 BULLS (994.75 CATTLE UNITS)

Production	526,727	gals.
Average cost per gallon	25.5	cts.
Average price per gallon	23.7	cts.
Loss per gallon .....	.018	
Production	4,529,852	lbs.
Average cost per 100 lbs.	\$ 2.96	
Average price received per 100 lbs.	\$ 2.75	
Loss per 100 lbs.	\$.21	
Annual production per cow	675	gals.
Average herd consisted of 26.9 cows, 7.7 heifers, 9 calves, 1.3 bulls.		

Of these 29 farms, one kept all purebred Holsteins, 9 kept grade Holsteins with some purebreds, one kept all purebred Jerseys, 16 kept grade Jerseys and some purebreds, and 2 kept mixed herds or common grade stock.

The average value per cow was \$105, and the average production was 675 gallons per cow per year.

The average size of these 29 farms was 199 acres and the distance from market was 3.8 miles.

The cost per gallon of milk on the 25 farms which sold wholesale (Table 12) was 24.71 cents. The average price received was 22.34 cents which resulted in a loss of 2.37 cents a gallon or 28 cents a hundred.

TABLE 12.—MILK PRODUCTION COSTS FROM TWENTY-FIVE DAIRYMEN WHO SOLD WHOLESALE

Expenditures	Amount	Price	Total
Feed			
Corn	4,272.2 bu.	\$ 1.27	\$ 5,425.25
Bran	145.5 tons	33.80	4,917.02
Cottonseed meal	83 tons	44.25	3,672.50
Oats	23.32 tons	39.80	928.00
Oilmeal	10.55 tons	57.46	606.25
Fodder .....	.....	.....	1,370.00
Silage	24.53 tons	8.05	19,721.00
Pasture .....	.....	.....	8,571.00
Legume hay	809 tons	19.88	16,072.00
Other concentrates	176.5 tons	42.60	7,535.75
Non-legume roughage	492.75 tons	14.75	7,255.00
Miscellaneous .....	.....	.....	1,306.75
Mixed feed .....	.....	.....	494.00
Total feed cost .....	.....	.....	77,874.52
Miscellaneous costs			
Cattle purchased	152	\$93.54	14,220.50
Cattle died	34	.....	1,687.00
Veterinary fees .....	.....	.....	654.00
Breeding fees .....	.....	.....	9.00
Bedding .....	.....	.....	1,345.30
Interest on cattle .....	.....	.....	4,606.26
Taxes & insurance on cattle.....	.....	.....	605.95
Taxes & interest on real estate (bldgs.) .....	.....	.....	2,385.85
Insurance on real estate (bldgs.)...	.....	.....	214.00
Taxes & interest on equipment.....	.....	.....	477.69
Repairs, buildings .....	.....	.....	1,436.00
Repairs, equipment .....	.....	.....	977.60
Depreciation on real estate.....	.....	.....	2,020.20
Depreciation on equipment.....	.....	.....	824.97
Hauling milk .....	.....	.....	1,645.00
Ice .....	.....	.....	1,416.20
Feed grinding .....	.....	.....	20.00
Power and fuel .....	.....	.....	2,323.80

TABLE 12.—MILK PRODUCTION COSTS FROM TWENTY-FIVE DAIRYMEN WHO SOLD WHOLESALE—CONTINUED

Expenditures	Amount	Price	Total
Salt and stock food .....	.....	.....	224.41
Fees and dues .....	.....	.....	208.25
Miscellaneous .....	.....	.....	19.00
Testing .....	.....	.....	468.70
Total miscellaneous costs .....	.....	.....	37,789.68
Labor			
Man labor	164,427 hrs.	0.174	28,610.30
Horse labor	49,485 hrs.	0.125	6,185.63
Total labor costs .....	.....	.....	34,795.93
Summary of expenditures			
Feed costs .....	.....	.....	77,874.93
Miscellaneous costs .....	.....	.....	37,789.68
Labor costs .....	.....	.....	34,795.93
Total costs .....	.....	.....	150,460.13
Credits	Amount	Price	Total
Increased inventory .....	.....	.....	10,918.60
Manure	5,740 tons	\$ 1.82	10,457.50
Cattle sold	609	43.01	26,194.99
Feed sacks sold	1,760	.....	204.80
Hides sold	22	.....	117.45
Total credits .....	.....	.....	47,893.34
Net cost (total expenditures less credits)	.....	.....	102,566.79
10% of net cost for managerial ability and risk .....	.....	.....	10,256.68
Total net cost of production.....	.....	.....	112,823.47

SUMMARY OF DATA ON A TOTAL OF 684 COWS, 199 HEIFERS, 238 CALVES, 34 BULLS
(877 CATTLE UNITS)

Production	456,506 gals.
Average cost per gallon	24.71 cts.
Average price received per gallon	22.34 cts.
Loss per gallon	2.37 cts.
Production	3,925,951.6 lbs.
Average cost per 100 lbs	\$ 2.87
Average price received per 100 lbs.....	\$ 2.59
Loss per 100 lbs.....	\$.28
Production per cow	667.41 gals.
Average herd consisted of 27.3 cows, 8 heifers, 9.5 calves, 1.38 bulls.	

The average size of the farms in this group was 210 acres; the average distance from the local market was 3.98 miles, the average value per cow was \$106, and the average production per cow per year was 667.4 gallons.

The four retailers (Table 13) produced milk at a cost of 30.6 cents per gallon and received an average price of 31.5 cents per gallon. This gave a gain of not quite one cent a gallon. The farms of this group averaged 132.8 acres, the average distance from market was 2.38 miles, the average value per cow was \$100 and the average production per cow per year was 728 gallons.

TABLE 13.—MILK PRODUCTION COSTS FROM FOUR DAIRYMEN WHO SUPPLIED LOCAL MARKETS

Expenditures	Amount	Price	Total
Feed			
Corn	1365.0 bu.	\$ 1.22	\$ 1,667.00
Bran	12.25 tons	33.62	412.00
Cottonseed meal	10.5 tons	42.90	450.00
Oats	1.4 tons	42.90	60.00
Oilmeal	49 tons	53.60	263.60
Silage	293.0 tons	8.15	2,384.00
Pasture .....	.....	.....	1,237.00
Legume hay	121.6 tons	22.67	2,758.00
Other concentrates .....	.....	.....	1,128.00
Non-legume roughage	47 tons	12.34	580.00
Miscellaneous .....	.....	.....	218.00
Mixed feed .....	.....	.....	180.00
Total feed cost .....	.....	.....	11,337.60
Miscellaneous costs			
Cattle purchased	43	\$46.96	4,699.00
Cattle died	33	9.18	303.00
Veterinary fees .....	.....	.....	182.00
Breeding fees .....	.....	.....	70.00
Bedding used	16 tons	.....	110.00
Interest on cattle .....	.....	.....	586.25
Taxes & interest on cattle .....	.....	.....	106.50
Taxes & interest on real estate (bldgs) .....	.....	.....	226.50
Insurance on real estate (bldgs.) .....	.....	.....	36.50
Taxes and interest on equipment .....	.....	.....	94.00
Repairs, buildings .....	.....	.....	112.50
Repairs, equipment .....	.....	.....	945.50
Depreciation on real estate .....	.....	.....	195.50
Depreciation on equipment .....	.....	.....	232.20
Ice .....	.....	.....	278.00
Power and fuel .....	.....	.....	278.50
Salt and stock food .....	.....	.....	19.00
Fees and dues .....	.....	.....	1.00
Testing .....	.....	.....	144.00
Miscellaneous .....	.....	.....	278.50
Total miscellaneous costs .....	.....	.....	8,898.45

TABLE 13.—MILK PRODUCTION COSTS FROM FOUR DAIRYMEN WHO SUPPLIED LOCAL MARKETS—CONTINUED

Expenditures	Amount	Price	Total
Labor			
Man hours	33,360	.174	5,804.64
Horse hours	18,455	.125	2,306.88
Total labor costs			8,111.52
Summary of expenditures			
Feed cost			11,337.60
Miscellaneous cost			8,898.45
Labor cost			8,111.52
Total costs			28,347.57
Credits	Amount	Price	Total
Increase in inventory			4,400.00
Manure	770 tons	1.81	1,390.00
Cattle sold	66	40.87	2,898.00
Feed bags sold			32.00
Hides	15	3.73	56.00
Total credits			8,776.00
Net cost (total expenditures less credits)			19,571.57
10% of net cost for managerial ability and risk			1,957.16
Total net cost of production.....			21,528.73

SUMMARY OF DATA ON A TOTAL OF 96½ COWS, 24 HEIFERS, 23 CALVES, 3½ BULLS
(117¾ CATTLE UNITS)

Production	70,221 gals.
Average cost per gallon	30.6 cts.
Average price received per gallon	31.5 cts.
Gain per gallon	0.9 cts.
Production	603,900.6 lbs.
Average cost per 100 lbs.	\$ 3.55
Average price received per 100 lbs.	\$ 3.65
Gain per 100 lbs.	\$.10
Production per cow	728 gals.
Average herd consisted of 24 cows, 6 heifers, 6 calves, 1 bull.	

The itemized average cost per gallon of milk produced (Table 14), when compared with similar data from the other two areas (Tables 4 and 9) shows where cheaper production was effected. The St. Louis and Kansas City farms show lower feed and labor costs per gallon. The lower feed costs are attributable largely to the more extensive use of silage. The average labor costs for the St. Joseph area would be expected to be higher, owing to the larger proportion of retailers among the dairymen whose records were studied.

TABLE 14.—PRODUCTION COST PER GALLON OF MILK

	Amount	Value
Feed		
Corn	0.6 lbs.	0.013
Bran	0.6 lbs.	0.010
Cottonseed meal	0.35 lbs.	0.008
Other concentrates .....	.....	0.023
Legume hay	3.53 lbs.	0.036
Non-legume roughage .....	.....	0.017
Silage	10.4 lbs.	0.042
Pasture .....	.....	0.019
Mixed feed .....	.....	0.001
Total feed .....	.....	0.169
Miscellaneous cost .....	.....	0.112
Labor		
Man labor	0.37 hrs.	0.055
Horse labor	0.13 hrs.	0.016
Total labor .....	.....	0.081
Total gross cost .....	.....	0.362
Credits .....	.....	0.107
Total net cost per gallon.....	.....	0.255

Annual costs per cow (Table 15) are calculated from Table 11, by reducing all stock in the herd to the cow basis as explained for the other areas. The production per cow was obtained, of course, by dividing the total gallons by the actual number of cows. Also value per cow is per milk cow rather than per unit in the herd. Other costs are prorated on the unit basis.

TABLE 15.—ANNUAL COSTS PER COW

	Amount	Price	Total
Feed cost			
Corn	5.7 bu.	.....	\$ 7.16
Bran	319 lbs.	.....	5.39
Cottonseed meal	189 lbs.	.....	4.17
Other concentrates .....	.....	.....	12.20
Legume hay	0.95 tons	.....	19.08
Non-legume roughage .....	.....	.....	9.32
Silage	2.78 tons	.....	22.39
Pasture .....	.....	.....	9.93
Mixed feed .....	.....	.....	0.68
Total feed .....	.....	.....	\$ 90.32
Labor			
Man labor	200 hrs.	.....	34.82
Horse labor	68 hrs.	.....	8.58
Total labor cost .....	.....	.....	43.40

TABLE 15.—ANNUAL COSTS PER COW—CONTINUED

	Amount	Price	Total
Miscellaneous costs			
Depreciation, 12%	12.60
Interest on Cows, 6% (value \$105)	6.30
Bedding	1.47
Veterinary	0.85
Use of buildings	6.70
Use of equipment	3.58
Ice	1.71
Feed grinding	0.02
Power and fuel	2.64
Salt and stock food	0.25
Bull service	2.00
Miscellaneous expenses	3.59
Total miscellaneous cost	41.71
Summary of costs			
Feed cost	90.32
Labor cost	43.40
Miscellaneous cost	41.71
Gross costs	175.43
10% of net cost for managerial ability and risk	17.54
Credits	Amount	Price	Total
Manure	6.6 tons	.....	11.98
Calf	5.00
Feed sacks	0.24
Hides	0.17
Total credits	17.39
Net cost	\$ 175.58
Gallons per cow	675	.....
Total gross costs	26c	.....

NATURE OF COSTS

The casual observer immediately wants to know how dairymen continue in business if they lose money on every gallon of milk they produce. This same inquiry usually arises in connection with most cost figures that involve more than immediate running expenses. It is difficult at first to believe that dairymen are losing so heavily. The loss, especially of 6 to 7 cents a gallon, therefore, needs some interpretation.

It is certain that if the dairymen have to meet all the costs shown in the foregoing data many of them are losing money. Some

of the costs charged, however, do not have to be paid immediately, but may be deferred. For instance, the charge of 10 per cent on other net costs for managerial ability and risk in the St. Louis data is not an actual cash cost in the particular year studied, unless the dairyman met with misfortune or calamity in that particular year. However, in the long run this is a legitimate cost that will have to be met. But even tho this 10 per cent cost is not allowed, the cost per gallon is 29.09 cents, or 3.73 cents above the average price of 25.36 cents received. (See figures on St. Louis area, page 6).

If the dairyman owns his plant, equipment, and cattle, and does not actually have to pay interest on the money invested in them, he can for a time, of course, accept no interest on his own investment and meet low prices. For instance, in Table 1 the interest on equipment, depreciation on real estate and depreciation on equipment amount to \$19,949.81. If, in addition to eliminating the 10 per cent cost mentioned, this cost for interest and depreciation be eliminated, the cost per gallon of milk is reduced to 26.03, which leaves a loss of only 0.67 cents or a little more than half a cent a gallon. While a dairyman does not have to meet these costs, except taxes, in cash outlay any one year, he will have to be able to lay aside enough to replace buildings and equipment in the long run or go out of business. Many of the farmers interviewed stated that they were not expecting to make interest on their investment at present. To meet the price of 25.36 cents, they would have not only to make no interest on their investment but also sell at a price that would not allow them to replace buildings and equipment when worn out, nor would they have any margin to cover risk.

The loss per gallon as calculated in Table 1 was exactly 6.63 cents on a production of 653,728.11 gallons, which represented a total loss on production of \$43,342.17. This means that the costs of production as recorded in Table 1 would have to be cut \$43,342.17 before the dairymen could break even. It will be noticed that feed was charged at the local farm prices. Those dairymen who produced part of their feed might make a margin of profit in producing the feed at a cost below the local price. This profit in growing feed might enable dairymen to continue in the dairy business for a time. However, if the profit was in growing the feed and there was no additional profit in handling the feed thru cows, dairymen would soon be induced to become grain and hay farmers rather than dairymen. Where the cost of making the change is not too heavy, farmers will shift their type of farming to the most profitable type un-

der existing conditions. The feed grown by dairymen in the section studied was mostly corn, legume hay, and silage. Most of the other feeds were bought, with the exception of pasture and fodder. If, in Table 1, the corn were figured at half price, or 61 cents instead of \$1.22, legume hay at half price, or \$11.81, and silage at half price, or \$4.28, the reduction in cost that would be effected would amount in total to \$42,499.00—nearly the \$43,342.17 reduction necessary for the dairymen to break even. The exact cost per gallon with corn, hay, and silage figured at the reduced price, would be 25.49 cents per gallon, against the price of 25.36 cents per gallon received, which would thus leave a net loss per gallon of only 0.13 cents. If the \$10,808.75 worth of pasture were also counted out, the reduction in costs would be enough for dairymen to meet the price offered and have a very small margin of profit. The elimination of the pasture cost would mean that since the farmer owned the pasture and did not have to pay actual cash rent, he would furnish his cows pasture free of charge, or in other words, get nothing for the use of his pasture.

These different angles of considering the cost figures for the St. Louis area have been mentioned to make clear how, even with such a difference between costs of production and sale prices, the farmer can continue in business for a time without bankruptcy. In such cases they simply have to draw on capital on hand. That an industry can exist for a time under such circumstances is evident. That no industry will continue permanently under such business conditions is equally plain. It is difficult at first thought to grasp that production costs which are not immediate cash costs, but costs that go to make up future necessary reinvestments for maintenance are real costs. The failure to accept such facts has been the bone of contention in many of the recent milk price inquiries.

SUMMARY

A condensed statement of milk production costs and prices received in the different areas is given in Table 16. Costs and prices are shown for all the farms in each area, for the farms selling wholesale only, and for those doing their own retailing. The average for all wholesalers and all retailers is also shown. Certain supplementary factors that may throw additional light on the data presented are given in Table 17. These factors are at least descriptive to a degree of the conditions under which the costs presented obtain.

TABLE 16.—AVERAGE COST AND PRICES OF AREAS COMPARED

Area	All Farms		Selling Wholesale		Selling Retail ¹	
	Cost per gal. cents	Price per gal. cents	Cost per gal. cents	Price per gal. cents	Cost per gal. cents	Price per gal. cents
St. Louis	31.9	25.4	31.8	24.7	33.3	29.9
St. Joseph	35.4	31.8	33.0	20.7	37.9	43.4
Kansas City....	25.5	23.7	24.7	22.3	30.6	31.5
Average			29.6	23.0	35.7	38.8
No. farms	101		78		23	
No. milk cows..	2569		1979		590	

¹Records from retailers in the St. Louis and Kansas City areas were for nearby smaller towns and were not on milk retailed in either of these cities. In the case of the St. Joseph retailers, the milk was retailed in St. Joseph.

TABLE 17.—MISCELLANEOUS FACTORS DESCRIPTIVE OF THE DIFFERENT AREAS

	All farms	Wholesale farms	Retail farms
Average size of farm			
St. Louis	167.9	183.6	97.0
St. Joseph	96.8	116.8	73.1
Kansas City	199.0	210.0	132.8
Average distance from market			
St. Louis	1.29	1.19	1.75
St. Joseph	3.88	4.21	3.48
Kansas City	3.80	3.98	2.38
Gallons per cow per year			
St. Louis	625.6	630.0	598.0
St. Joseph	710.0	696.7	719.9
Kansas City	675.0	667.4	728.0
Value of cows per head			
St. Louis	107.0	106.0	111.0
St. Joseph	139.0	112.0	156.0
Kansas City	105.0	106.0	100.0
Per cent of farm keeping	Holstein	Jersey	Mixed
St. Louis	57	8	35
St. Joseph	52	17	31
Kansas City	34	59	7

The cost of production per gallon to dairymen selling wholesale was practically the same in both the St. Louis and St. Joseph areas. (Table 16.) The lower cost in the Kansas City area as compared with the St. Louis area is due mainly to cheaper feeding,

especially the use of less corn and cheaper roughness aside from silage (Tables 18 and 19). The lower miscellaneous cost of 2 or 2.5 cents in the Kansas City area (Table 18) is due to the fact that the men in the Kansas City area were delivering to local creameries, whereas the St. Louis men delivered to the local railway station and then paid express to the central receiving station. This express varied in cost from 1½ to 2½ cents a gallon. No such charge appears among the Kansas City men's miscellaneous cost. It will be noticed, of course, that the difference in price received is approximately this 2 to 2½ cents. The balance of the excess miscellaneous cost in the St. Louis area is due mainly to greater building expense, and to a greater loss this year from the death of stock. As compared with the St. Joseph area, the lower costs of the Kansas City dairymen who sold wholesale is due largely to the more extensive use of silage and the use of less corn and legume hay (Tables 18 and 19). The miscellaneous cost over that for the Kansas City area is due mainly to the greater expense for ice, power, and fuel.

TABLE 18.—COSTS TO FARMERS—ITEMIZED—WHOLESALE AND RETAILING COMPARED

	St. Louis		St. Joseph		Kansas City		Average	
	Whole-saler	Re-tailer	Whole-saler	Re-tailer	Whole-saler	Re-tailer	Whole-saler	Re-tailer
Feed cost per gallon	18.9c	20.4c	20.8c	22.4c	17.1c	16.2c	18.7	20.9
Labor cost per gallon	7.8c	13.7c	9.2	12.6	7.6	11.6	8.1	12.7
Misc. costs per gallon	15.1	12.8	13.1	11.1	10.5	15.3	13.1	12.2
Total	41.8	46.9	43.1	46.1	35.2	43.1	39.9	45.8
Credits per gallon ¹	10.0	13.6	10.1	8.2	10.5	12.5	10.3	10.1
Net cost per gallon	31.8c	33.3c	33.0c	37.9c	24.7c	30.6c	29.6c	35.7c

¹Credits per gallon result from the sale of young stock, feed bags, hides, and from manure produced and used.

In the case of the retailers the costs per gallon in the St. Louis and Kansas City areas were nearly the same (Table 15). This is to be expected as records for retailers in both these areas apply to milk retailed in small outlying towns and not in the cities. The records on retailers in the St. Joseph area apply to milk delivered in St. Joseph. It is to be expected, therefore, that the cost per gallon as well as the price received in the latter area will be higher. The more expensive production per unit in the St. Joseph area as compared with the other area is due mainly to a larger dependence on purchased concentrates (Tables 18 and 19) and to less supplementary returns other

TABLE 19.—SHOWING ITEMIZED FEED COST BY AREAS FOR WHOLESALE AND RETAIL PRODUCERS

	St. Louis		St. Joseph		Kansas City	
	Wholesale	Retailer	Wholesale	Retailer	Wholesale	Retailer
Corn	0.025	0.022	0.039	0.030	0.012	0.024
Bran	0.015	0.032	0.014	0.015	0.011	0.006
Cottonseed meal	0.007	0.001	0.008	0.005	0.008	0.006
Other concentrates....	0.014	0.020	0.024	0.046	0.023	0.025
Legume hay	0.055	0.078	0.070	0.068	0.035	0.039
Non-legume roughage	0.006	0.007	0.002	0.018	0.020	0.010
Silage	0.051	0.022	0.031	0.025	0.043	0.034
Pasture	0.016	0.022	0.020	0.016	0.019	0.018
Total	0.189	0.204	0.208	0.224	0.171	0.162

than from milk as shown in the lower credits per gallon (Table 18). The lower credits per gallon is accounted for by the lower valuation and less returns from manure and by the fact that the price of milk is such that the sale of cattle as a supplementary business is less extensive, compared with milk production, than in the other areas. The lower valuation of manure is justified on these smaller farms where production of milk is the main business. In fact, some of these dairymen almost give away manure to get it hauled off. Larger farms in the other areas which have herds of about the same size or smaller but which have more land can make use of more manure to advantage and consequently value it higher.

The combined cost of production per gallon for all wholesalers (See average in Table 16) in the three areas was 29.6 cents and the average price received was 23 cents. This leaves an average net loss of 6.6 cents per gallon.

The average cost of production for all retailers (See average in Table 16) was 35.7 cents per gallon, and the average price received was 38.8 cents per gallon, this leaves an average net profit of 3.1 cents per gallon.

CONCLUSIONS

While the foregoing data are not extensive enough to describe correctly the kind of dairy business carried on in any one section, they do cover three or four phases of the dairy business as they exist in this state in general or in the neighborhood of any one of the central markets referred to in this discussion. The St. Louis data

cover wholesale selling by express and retailing in smaller towns. The St. Joseph figures cover local wholesale marketing without use of express, and retailing in the larger cities. The Kansas City data are typical of local wholesale marketing thru creameries at a distance from the central market, where milk is sold mostly as cream, and of retailing in smaller towns. It is to be concluded, therefore, that the data presented are descriptive of conditions prevalent in different types of the dairy business rather than in the specific area referred to.

In no case were the men who were producing and selling milk wholesale averaging a profit when all items of cost were considered. A few individual cases of profit were due to particularly favorable contract prices rather than to exceptionally good production.

The producers who retailed milk averaged a net profit of 3.1 cents per gallon. Only in one area did they average a loss and in this case the average production of the herds was the lowest of any group. The large city retailers made the largest profits. They had a margin above cost of production and delivery of 5.5 cents per gallon.

If allowance is made for approximately 2 cents per gallon express or transportation, the difference in the St. Louis area between the cost of producing on the one hand and the cost of producing and retailing on the other is 3.5 cents per gallon. In the St. Joseph area the difference is 4.9 cents per gallon and in the Kansas City area 5.9 cents per gallon. Considering, for the three areas, all the milk wholesaled and all retailed, the difference averaged 6.1 cents per gallon.

On the basis of the difference between wholesale and retail prices, it appears that central distributors can sell at the same price as farmer retailers with a margin three to four times as large because milk can be bought wholesale cheaper than it can be produced.

NOTE: The item "cattle died" in foregoing tables has been debited as an expense and at the same time credited in determining "increase inventory" so as to show the extent to which loss of cattle was an expense. Usually, in accounting, "stock died" is taken care of thru the second inventory only.