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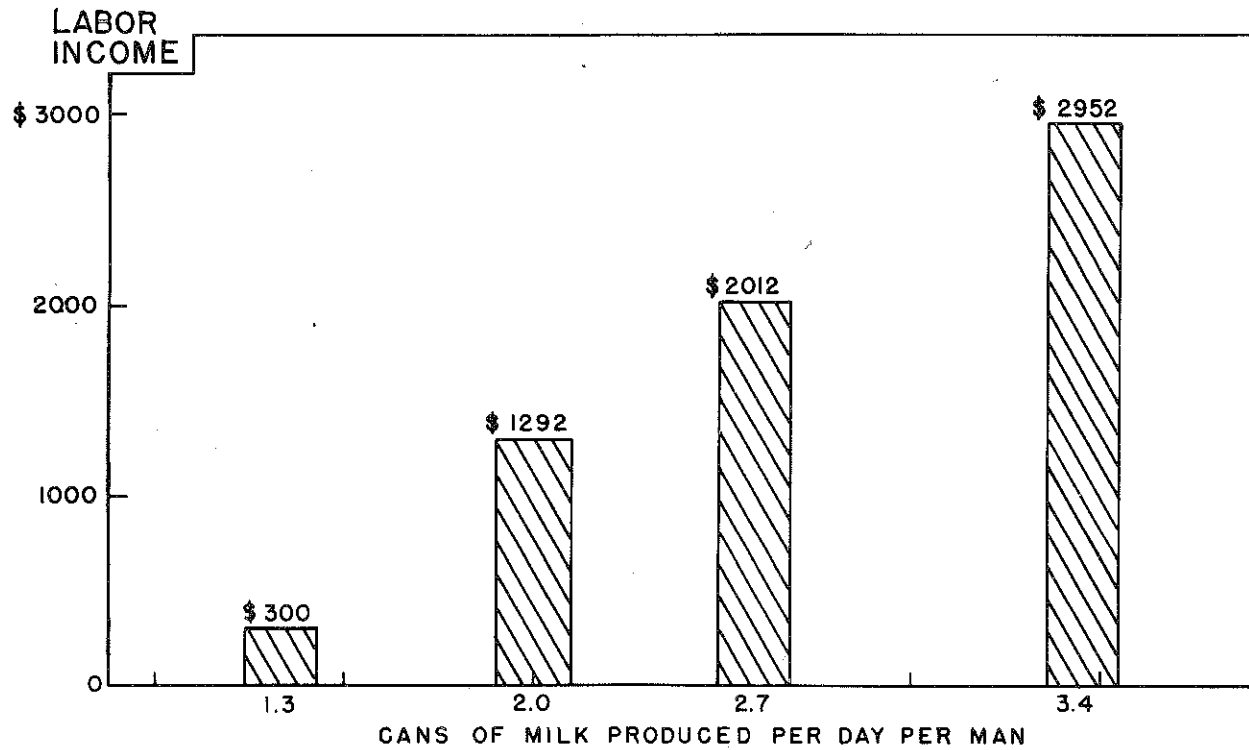
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*John D. Cunningham*

# THE COST OF PRODUCING MILK MONTGOMERY COUNTY 1944-45



## MILK PRODUCTION PER MAN AND LABOR INCOME

A high output of milk per worker was an important key to financial success in this area in 1944-45. High production per man was obtained principally by these practices: (1) keeping moderately large herds, which made possible (2) spending less than the average amount of time per cow to do the chores in the stable, yet (3) having better-than-average producing cows.

Prepared by L. C. CUNNINGHAM  
Department of Agricultural Economics  
New York State  
College of Agriculture, Ithaca, New York

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THE COST OF PRODUCING MILK  
MONTGOMERY COUNTY  
1944-45

L. C. Cunningham

This bulletin reports a study of dairy farming under war-time economic conditions. The study included:

- (1) A description of the costs of producing milk and of the physical and financial organization of commercial dairy farms.
- (2) An analysis of the relationships of farm business factors to costs and incomes.

Method of Study

Records of the whole farm business and cost of milk production in the dairy enterprise were obtained by the survey method in a block of 107 farms in Montgomery County. The data were for the 12-months period ended April 30, 1945.

The farms surveyed were located in an area about six miles by nine miles, mostly in the town of Canajoharie, in the south-central section of the county. Complete records were enumerated for those farms (a) with 6 or more cows (b) on which milk sold at wholesale was the major source of income and (c) whose operators were primarily farmers. Some information was obtained about the other farms and residences to provide an inventory of the properties in the whole area.

Economic Conditions in 1944-45

The 12 months covered by the survey were part of a period of war-time prices of farm products and costs in farming. Both prices and costs rose rapidly following 1939 to reach a level in 1945 of about double that before the war.

The average market price of milk received by dairymen in the study was \$3.45 per 100 pounds (3.7 per cent butterfat test) and the feed subsidy payments averaged 65 cents per 100 pounds, making a total return of \$4.10. Purchased concentrates cost on the average \$59 per ton. The cash wages and board of hired help averaged \$72 per month. Despite relatively high wages, farm help was unusually scarce. Machinery and many farm supplies were also difficult to obtain.

Using the 1910-14 period as a base, or 100, the return for milk was 256, concentrates 190, farm wages 317, and costs in dairy farming taken as a group, including feed, labor, machinery, building materials, fertilizer, seeds, taxes, insurance, and other items, 232. With both weather and price relationships reasonably favorable, dairy farm incomes in 1944-45 were favorable compared to those of previous years. They were not favorable, however, compared to earnings of urban workers for the same period.

Description of the Area

The area is located on the extreme eastern edge of the central New York region of high-lime soils. Dairying is the predominate type of farming in the area surveyed; the area is fairly typical of this whole dairy region. The lay of the land in the area is sloping to gently rolling. The soils are clay loams and silty clay loams, and are dark colored with mostly good surface drainage. The subsoils are generally too heavy for good natural subdrainage. Among the soils of the State, the soils in this area are about average or slightly above. The area was mapped as land classes III and IV. Seventy of the farms were in land class III and 37 in land class IV.

Farms and Residences in the Area

Located in the area were 129 commercial dairy farms from which wholesale milk was sold during 1944-45 (table 1).

TABLE 1. FARMS AND RESIDENCES IN THE CANAJOHARIE AREA of Montgomery County, 1944-45

Farms		
Dairy farms selling wholesale milk in 1944-45		
Enumerated		107
Not enumerated		
Change of operator	5	
Sickness, language difficulty, or not home	8	
Refusal	5	
Not visited	4	
		<u>22</u>
Total dairy farms		129
Part-time farms or very small businesses		26
Other farms		
Dairy farms not selling wholesale milk in 1944-45	14	
Other farms	10	
		<u>24</u>
Total all farms		179
Residences		
Occupied	105	
Idle	16	
Total residences		121
Other		
Commercial, schools, or churches		10

Detailed records were obtained for 107 of them. Of the other 22 farms, 5 had had a change of operator, 8 were not enumerated because of sickness, language difficulty, or the farmers were not at home, and 5 farmers refused to give records. Intermingled with these commercial dairy farms were 26 part-time farms or very small businesses and 24 other farms, 14 of which were dairy farms not selling wholesale milk in 1944-45.

Also in the area were 121 rural residences, 105 of which were occupied. Some of these were used by second operators of farms and by hired men on farms, but the majority of these houses, formerly farm homes, were lived in by people who worked in nearby industries. Much of the land that went with these farmsteads was worked by neighboring farmers.

#### Tenure

The renting of additional land by farmers with small farms in order to enlarge their farming operations was a fairly common practice in this area. Sixty-four of the 107 farmers owned all of the land they operated. These farms averaged 149 total acres operated per farm. Thirty-five other farmers, however, rented land to operate along with what they owned. They owned 119 acres per farm, on the average, and rented 52 additional acres to make a total of 171 acres operated per farm. Thus, about 1 farmer in 3 had so increased his size of business. The remaining 8 farmers rented all the land they operated. Their farms averaged 187 acres per farm in size. Cash renting was much more common than share renting.

In this area, as in many other sections of the State, the farms were originally laid out too small for present-day economic conditions. The discontinuance of some farming units and the enlarging of the others, which explains the large number of non-farm residences in the area, has been going on for several years and the point of adjustment apparently had not yet been reached by 1945.

### DESCRIPTION OF THE FARMS

#### Livestock

The average size of herd was 22 cows. Farms with fewer than 6 cows were not enumerated. Two farms had only 6 cows each and 19 had fewer than 15 cows. More than one-half of the herds, however, were in the size range of 20 to 35 cows. One extremely large farm in the area had 85 cows. The number of heifers being raised was about in line with normal replacement requirements. Other classes of livestock were not important. The average number of hens was only 66 per farm. Only 5 farms had more than 200 hens.

Cattle prices were unusually high. The average inventory price of cows on April 30, 1945 was \$186 per head. All livestock was inventoried at the close of the year at current market prices. Approximately the same level of prices was applied to beginning inventories of livestock in order to eliminate paper profits.

### Milk Production

The average amount of milk sold per farm was 142,542 pounds. In addition, 8,244 pounds of milk was produced and used on the farm, making total production of 150,786 pounds. The average butterfat test of the milk sold was 3.5 per cent.

Converted to 3.7 per cent butterfat test, the average amount of milk produced per cow was 6,605 pounds. On 17 of the farms less than 5,000 pounds of milk per cow was produced, whereas on 7 other farms at least 10,000 pounds per cow was produced. Feeding, breeding and other practices varied widely even within this small area. In fact, there was a greater difference in the rates of milk production per cow among farms in this area than there was between dairy areas of the State.

The seasonality of the milk production on these farms was very similar to that for New York State as a whole. In both cases, 43 per cent of the total milk for the year was sold in the months October to March.

The plants to which the milk was delivered from the farms surveyed were: Dairymen's League Cooperative Association at Canajoharie, Fort Plain and Schoharie; Shineman's Dairy, Canajoharie; Canajoharie Cooperative Milk Producers, Canajoharie; Adlers Creamery, Fort Plain; Baker Brothers, Canajoharie.

### Use of the Land

These 107 farms as operated in 1944-45 averaged nearly 160 acres per farm. The extreme variation in size was from 50 acres to 710 acres, but 60 of the farms had from 100 to 200 acres.

The area in crops averaged 87 acres per farm, or more than one-half of the total acreage. The remaining land consisted of 53 acres of pasture, 10 acres of woods and 9 acres of other land including the farmstead.

Practically all of the crop land was used for growing feed crops. Sixty per cent of the crop area was in hay, 22 per cent in small grains and 16 per cent in corn (table 2). Although highly irregular from farm to farm, and probably on the same farms from year to year, this use of the crop land indicates the fairly typical dairy farm feed-crop rotation of 1 year of corn, 1 year of small grain and 3 years of hay.

TABLE 2. ACREAGES AND YIELDS OF IMPORTANT CROPS  
107 farms, Montgomery County, 1944-45

Crops	Per cent of crop area	Per cent of farms growing	Acres per farms growing	Average yield per acre
Corn for grain	1.1	36	3	65 bu.
Corn for silage	14.3	90	14	7 tons
Corn for fodder	0.5	11	5	
Oats	9.4	54	15	40 bu.
Oats and barley	9.0	42	19	35 bu.
Barley	0.1	3	4	32 bu.
Buckwheat	2.8	30	8	20 bu.
Wheat	1.2	12	9	20 bu.
Hay	60.0	100	52	1.6 tons
Other crops	<u>1.6</u>			
	100.0			

All of the farms raised hay, of course, and nine out of ten of them had corn for silage. Most of them had oats or barley or a combination of these grains. Nearly one farm in 3 raised some buckwheat, one in 8 raised wheat, and about one in 3 had some corn for grain in 1944.

The acreage of hay cut in 1944 averaged 52 acres per farm. The yield was 1.6 tons per acre. The one-half of the farmers who raised oats had 15 acres per farm and the average yield was 40 bushels per acre. The acreage of corn for silage was 14 acres and the yield was 7 tons per acre. The average yields of the feed crops on these farms were only slightly higher than State average yields, except in the case of corn silage which was somewhat below the State average.

#### Comparison of Dairy Areas

The 22 cows per farm average in this area was slightly larger than the 19 to 21 cow averages in 4 other dairy areas of the State (table 3). The crop acreage per farm was not only larger than that in any of the other areas, but the crop area per cow was larger than in all the others except Cayuga which is more of a general farming section. Relative to the size of herd, the acreages of corn silage and of oats and barley were similar to those in the other upstate areas, but the hay acreage was larger than in most of the others.



TABLE 3. COMPARISON OF DAIRY AREAS

County	Average per Farm					Average crop acres per cow
	number of cows	crop acres	acres hay	acres corn silage	acres grain	
1939-40 <u>1/</u>						
Orange	28	60	47	7	0	2.1
Chenango	20	58	36	7	7	2.9
Cayuga	14	78	34	10	13	5.6
St. Lawrence	19	70	44	8	14	3.7
Cattaraugus	19	53	35	4	10	2.8
1942-43 <u>2/</u>						
Oneida	21	62	33	11	12	3.0
1944-45						
Montgomery	22	87	52	12	16	4.0

1/ Factors that Affect Costs and Returns in Producing Milk, Cornell University Agricultural Experiment Station Bulletin 804. By Ivan R. Bierly.

2/ Farm Management in Oneida County 1942-43. Cornell University Agricultural Experiment Station Bulletin 830. By L. C. Cunningham and S. W. Warren.

Capital

The average capital investment in land and buildings, livestock, machinery and equipment, and feeds and supplies amounted to nearly \$17,000 per farm (table 4). About one-half of this total was in the farm itself and one-third in livestock. Land and buildings were valued at \$50 per acre on the average.

TABLE 4. AVERAGE CAPITAL PER FARM  
107 farms, Montgomery County, 1944-45

Items	Average capital per farm	Per cent of total
Land and buildings	\$ 7,877	47
Livestock	5,473	33
Machinery and equipment	3,236	19
Feeds and supplies	233	1
Total	\$16,819	100

Receipts

Milk sales, including dairy feed payments of \$933, averaged \$5,745 per farm (table 5). They accounted for nearly 80 per cent of the total receipts of \$7,269 per farm. The cattle sales, amounting to about \$500 per farm, were 8 per cent of the total. No other enterprise contributed more than 2 per cent to the total receipts. Work off the farm amounted to only \$39 per farm, but only farms whose operators were primarily farmers were enumerated. The inventory price of cows was \$186 per head at the close of the year compared to \$180 at the beginning. This increase together with small increases in numbers of livestock and amounts of machinery and feeds and supplies during the year resulted in a net inventory increase of about \$400 per farm. The total receipts include this item.

TABLE 5. AVERAGE RECEIPTS PER FARM  
107 farms, Montgomery County, 1944-45

Items	Average per farm	Per cent of total
Milk sold *	\$5,745	79
Cows and heifers sold	413	6
Veal and bobs sold	120	2
Crops sold	154	2
Eggs sold	163	2
Poultry sold	80	1
Work off farm **	39	1
Other receipts	156	2
Net increase in inventory	399	5
Total	\$7,269	100

\* Includes dairy feed payments.

\*\*Man labor off farm, machine work, trucking, and so forth.

Farm Expenses

The total farm expenses, including all the ordinary operating outlays, but excluding interest on the investment and any charge for labor and management of the farmer, amounted to \$4,664 per farm (table 6). The purchased feed bill amounted to more than \$1,400 per farm and accounted for 30 per cent of the total expenses. The labor bill was next in importance. The cash wages and board of hired labor amounted to about \$400 per farm, the wage allowance of unpaid family labor about \$600. The combined wage bill of \$1,021 was 22 per cent of all expenses. Livestock bought accounted for 11 per cent, and machinery and equipment expenses 14 per cent of the total. Other items were less important. Land and school taxes averaged \$157 per farm, or \$20 per \$1000 of inventory valuation of real estate.

TABLE 6. AVERAGE EXPENSES PER FARM  
107 farms, Montgomery County, 1944-45

Items	Average per farm	Per cent of total
Purchased feed	\$1,411	30
Hired labor and board	403	9
Unpaid family labor	618	13
Livestock bought	512	11
Machinery and equipment	647	14
Taxes, real estate	157	3
New buildings and building repairs	265	6
Fertilizer and lime	44	1
Purchased seeds	108	2
Other crop expense	62	1
Hired milk hauling	85	2
Fire insurance	47	1
Other farm expenses	305	7
Total expenses	\$4,664	100

Labor Income

The \$2,605 difference between the receipts and expenses was the amount left to cover interest on the investment and to pay the farmer for his own time (table 7). Irrespective of the amount of indebtedness on the farms, an interest charge on the total investment was made in order to have a measure of financial success in making comparisons of groups of farms.

TABLE 7. AVERAGE LABOR INCOME  
107 farms, Montgomery County, 1944-45

Items	Average per farm
Total capital	\$16,819
Total farm receipts	7,269
Total farm expenses	<u>4,664</u>
Return to money invested and operator's time	2,605
Interest on average capital at 5 per cent	<u>841</u>
LABOR INCOME	1,764
Farm privilege	506
LABOR EARNINGS	\$ <u>2,270</u>

On the average investment of \$16,819 per farm, this charge at 5 per cent amounted to about \$840. Thus, there remained to pay for the farmer's time an amount of \$1764. This is called Labor Income and is used in this bulletin as the measure of financial success of the individual farm business.

In addition to his labor income, the farmer had the use of a house and products from the farm for family living. These so-called privileges at farm prices were valued at \$506 (table 8). Thus the total return to the farmer amounted to \$2270, called Labor Earnings.

TABLE 8. OPERATOR'S PRIVILEGES  
107 farms, Montgomery County, 1944-45

Items	Average per Farm	
	Amount	Value
Milk	1,609 qts.	\$113
Eggs	204 doz.	70
Vegetables, potatoes and fruit		106
Meat and chickens		7
Other farm products		1
Wood	10 cords	46
Use of dwelling		163
Total		\$506

Variation in labor incomes. As suggested by the differences from farm to farm in size of herd, rate of milk production and other farm organization factors, some farms were much more successful than others. The average labor income of all the farms was \$1764, but on 12 of the farms losses occurred. Incomes ranging between \$1000 and \$1999 were the most common. On 7 farms, however, labor incomes ranging from \$3000 to \$3999 were made, and on 11 other farms incomes equalled or exceeded \$4000. Some of the important reasons for such differences in incomes will be discussed in later sections of this bulletin.

<u>Variation in Labor Incomes</u>	
Range in Labor Income	Number of farms
Less than 0	12
0 to \$999	22
\$1000 to \$1999	37
\$2000 to \$2999	18
\$3000 to \$3999	7
\$4000 or more	11
Total	107

#### Comparison of the Farms in 1932-33 and 1944-45

A similar survey of some of the same farms in this area was made for the 12-month period ended August 31, 1933. Because of a difference in sampling, data are shown for identical farms as well as for all farms in the two surveys (table 9). Changes in the physical organization of the farms during the 12-year period were very significant, and changes in the financial results were indeed striking.

TABLE 9. COMPARISON OF FARMS IN 1932-33 AND 1944-45  
Montgomery County

Items	All Farms		Identical Farms	
	1932-33*	1944-45	1932-33	1944-45
<u>Farm Business Factors</u>				
Number of cows	20	22	20	25
Crop acres	72	87	74	92
Total acres	127	159	132	163
Man equivalent	2.1	1.9	2.1	2.1
Pounds milk produced per cow	6,126	6,605	6,212	6,512
Tons silage per acre	8	7	9	8
Bushel oats per acre	25	40	27	45
Bushels of oats and barley	22	35	23	35
Tons hay per acre	1.5	1.6	1.4	1.7
Cans milk produced per day per man	2.0	2.4	2.1	2.5
Cows per man	10	12	10	12
Price of milk	\$1.24	\$4.10	\$1.29	\$4.04
Per cent work units on cows	64	66	65	67
Per cent milk Oct.- Mar.	42	43	41	43
<u>Financial Results</u>				
Average capital	\$13,255	\$16,819	\$13,077	\$18,883
Total receipts	\$ 2,041	\$ 7,269	\$ 1,961	\$ 8,204
Total expenses	2,036	4,664	1,876	5,173
Farm Income	5	2,605	85	3,031
Interest at 5 per cent	663	841	654	944
Labor Income	-668	1,764	-739	2,087

\* Report of a Farm Management Survey in Montgomery County, 1932-33. A.E., 57 By G. W. Hedlund.

The outstanding changes in the set-up of the farms were increases in (1) the rate of milk production per cow, (2) the size of business and (3) the output of milk per man. The pounds of milk produced per cow increased about 5 per cent. Yields of crops, except corn silage, were somewhat higher in 1944 than in 1933. The acreage operated per farm, both total and crop, was enlarged and more cows were kept per farm. However, the size of the labor force was not increased, so the output of milk per man in 1944-45 rose about 20 per cent over that in 1932-33.

The dominance of the dairy enterprise in the farm business and the seasonality of milk production remained about unchanged.

The price level of farm products in the country rose from the depression low of 68 (1910-14=100) in 1932-33 to a war-time level of 196 in 1944-45. The price received by dairymen in this area per 100 pounds of milk increased from about \$1.25 in the early period to more than \$4.00 in the later one. Purchased feed rose from \$27 per ton to \$59; the index of costs, including feed, labor and so forth, in dairy farming increased from 105 (1910-14=100) to 232, or more than doubled. The two periods represent about the extremes of depression and prosperity in farming.

From 1932-33 to 1944-45 the total farm expenses per farm increased about 3 times, but the farm receipts increased about 4 times. The average labor income on identical farms was approximately \$2,800 higher in 1944-45 than it was 12 years earlier. These data are tangible evidence as to the drastic effects of an unstable commodity price level on dairy farming. A collapse of the price level previous to 1932-33 had a disastrous effect on incomes in this dairy farming community; the subsequent upswing in the price level brought prosperity. A downswing of similar proportions can bring depression again, despite the increases in production efficiency that have been made on these farms.

#### Cost of Producing Milk

Farm basis. Since these were specialized dairy farms, a "farm cost" of producing milk was calculated. The grand total of all costs, including the farm operating expenses, interest on the investment and value of the operator's labor, amounted to about \$7,300 per farm (table 10). The income other than from milk averaged approximately \$1,500. This amount deducted from the total costs left \$5781 as the cost of the 146,368 pounds of 3.7 per cent milk produced per farm. Consequently, the farm cost of producing 100 pounds of milk amounted to \$3.95.

TABLE 10. AVERAGE COST OF PRODUCING MILK, FARM BASIS  
107 farms, Montgomery County, 1944-45

Items	Average per farm	
Total farm expenses	\$ 4,664	
Interest on investment	841	
Value of operator's labor	<u>1,800</u>	
Grand total all costs		\$7,305
Total receipts	7,269	
Value of milk sold	<u>5,745</u>	
Income other than milk		<u>1,524</u>
Total costs minus other income		\$5,781
Pounds of milk produced per farm	146,368 *	
Cost per 100 pounds of milk produced		\$ 3.95

\* 3.7 per cent butterfat test.

Enterprise basis. When all feed, labor and other items used directly by the cows and a share of building costs, equipment costs and similar overhead items were charged to cows, the average cost of keeping a cow for a year was \$274 (table 11). Feed amounted to \$136 and man labor \$79. Slightly more than a ton of grain, 2.5 tons of hay and nearly 4 tons of corn silage were fed per cow on the average. The pasture season was 161 days. The direct labor on cows averaged 175 hours per cow. The depreciation on cows amounted to \$16 per cow. At the time of freshening, heifers added to the herds were valued at \$164 per head. Cow replacements that were purchased cost on the average \$200 per head. Cows sold from the herds brought \$100 per head.

Credits for manure and calves produced resulted in a net cost per cow of \$259.

TABLE 11. AVERAGE COST OF PRODUCING MILK, ENTERPRISE BASIS  
107 farms, Montgomery County, 1944-45

Items	Per cow		Per 100 lbs. of milk produced*		Per cent of total
	Amount	Value	Amount	Value	
<b>COSTS</b>					
Concentrates	2,265 lbs.	\$ 67.18	34 lbs.	\$ 1.02	25
Dry forage	2.5 t.	41.35	77 lbs.	.63	15
Succulents	3.8 t.	18.82	114 lbs.	.28	7
Pasture	161 days	8.53	2.4 days	.13	3
Total feed		\$135.88		\$ 2.06	50
Labor on cows	175 hrs.	78.76	2.6 hrs.	1.19	29
Depreciation on cows (net)		15.89		.24	6
Interest on cows		9.15		.14	3
Milk hauling		9.99		.15	4
Building use		3.92		.06	1
Bull service		5.20		.08	2
Equipment use		3.48		.05	1
Bedding		3.76		.06	1
Miscellaneous		7.58		.11	3
Total costs		\$273.61		\$4.14	100
Manure		7.00		.11	
Calves		7.98		.12	
Total credits		\$ 14.98		\$ .23	
NET COST		\$258.63		\$3.91	

\* 3.7 per cent butterfat test.

Thirty-four pounds of concentrates, 77 pounds of hay and 114 pounds of silage were required to produce 100 pounds of milk. The man labor requirement was 2.6 hours per hundredweight. Feed made up 50 per cent and man labor 29 per cent of the total cost of production.

The net cost of producing 100 pounds of milk, calculated on the enterprise basis, was \$3.91. Average costs by the two methods were within 4 cents of each other.

Variation in the Cost of Producing Milk

<u>Variation in Costs</u>		The unit costs of milk production varied widely from farm to farm. The cost per 100 pounds on 81 of the 107 farms fell within a range of \$3.00 to \$5.00, but on 9 of the farms, the cost was less than \$3.00 per 100 pounds, and on 17 other farms the cost equalled or exceeded \$5.00 per hundredweight. Since the price received for milk among these farmers was fairly uniform, the wide difference in incomes shown in a previous section are suggestive of such a wide variation in production efficiency as indicated by the unit cost of milk production.
Cost per 100 pounds	Number of farms	
Less than \$3.00	9	
\$3.00 to \$3.99	45	
\$4.00 to \$4.99	36	
\$5.00 or more	<u>17</u>	
	107	

Comparison of 1944-45 Costs With Those in Previous Years

The average cost of \$3.91 per 100 pounds in 1944-45 compares with a cost of \$2.98 in 1942-43 and \$2.03 in 1939-40 (figure 1). The increase in the five year period amounted to \$1.88 per 100 pounds, or 93 per cent. The index of costs, wages and prices for which were gathered from state-wide reports, increased by a similar percentage from 1939-40 to 1944-45. Apparently, the cost of producing milk on dairy farms in New York State nearly doubled during World War II.

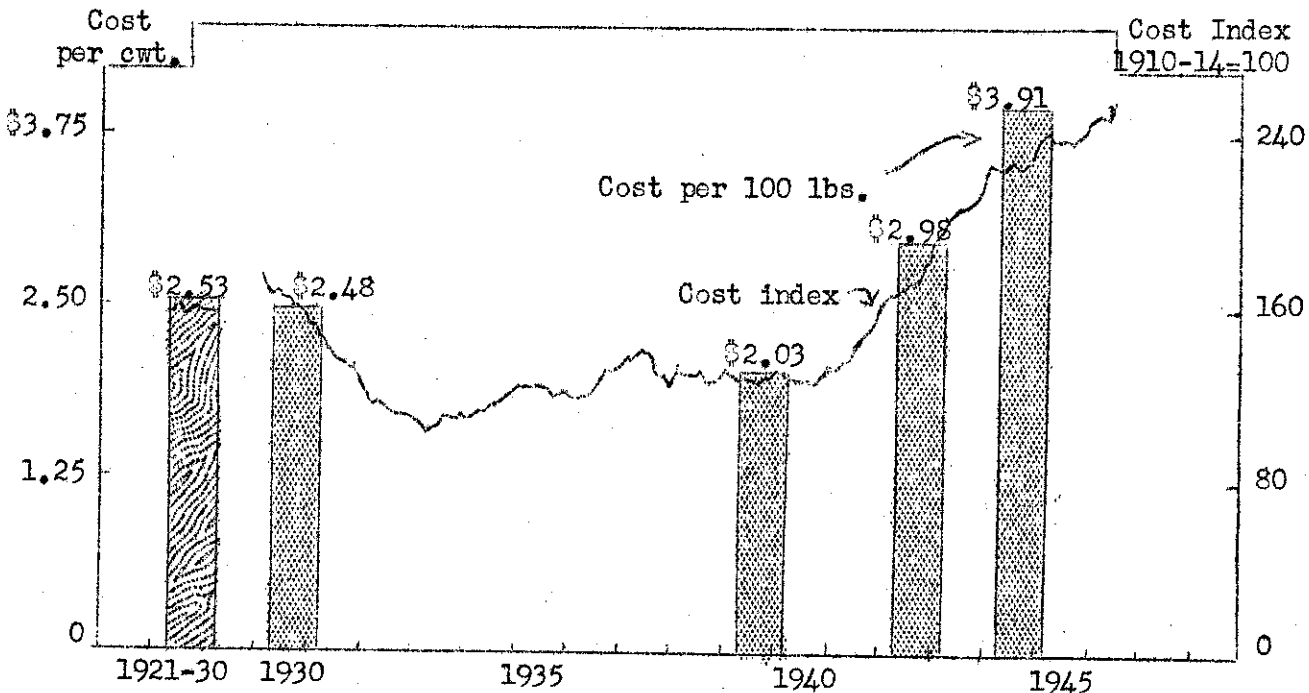


Fig. 1. The Average Cost of Producing 100 Pounds of Milk in Selected Years and The Index of Costs in Dairy Farming in New York, 1930 to 1945



## ANALYSIS OF RELATIONSHIPS \*

Differences in individual farm incomes caused by variations in prices, type of farming, and land class were largely eliminated by (1) the definition of the sample of farms enumerated, (2) selection of the area to be surveyed, (3) and the enumeration of the records for the same year.

As mentioned earlier, records were enumerated for those farms (a) with 6 or more cows, (b) on which milk sold at wholesale was the major source of income and (c) whose operators were primarily farmers. Thus, the type of farming in the sample was limited to commercial dairying. All of the milk from the farms was in the New York market pool, or was paid for at competitive prices. Consequently, most of the variations in milk prices were due to seasonality of production and butterfat test. The area was intentionally selected to eliminate a wide variation in land classes. The block of farms included only land classes III and IV and the areas of these two classes were relatively small and inter-mixed with no sharp physical lines of division.

Land Class

Sixty-five per cent of all of the farms in land class IV were enumerated compared to 58 per cent in land class III. In each land class, 12 per cent of the farms were dairy farms not enumerated. Fifteen per cent of all of the farms in land class III were part-time or very small businesses compared to 10 per cent in land class IV. Consequently, the sample of enumerated farms may be appropriately used to describe the commercial dairy farms but was not intended to be representative of the total agriculture in each land class.

Land class	<u>Dairy farms</u>		Part time or very small farms	Other farms	Total
	Enumerated	Not enumerated			
Per cent					
III	58.3	12.5	15.0	14.2	100.0
IV	64.9	12.3	10.5	12.3	100.0

The differences between the farms enumerated in land class III and those in land class IV were small. Crop yields were similar. The average hay yield was the same in both groups (table 12). The silage yield was slightly higher in land class III, whereas the grain yield was a little higher in land class IV. No significant differences were found in crop area per farm or size of herd. The milk production per cow was, however, about 600 pounds per cow higher in land class IV.

\* The one very large dairy farm was omitted from the following analysis of relationships. Such an individual case can indicate nothing as to relationships and its inclusion in the various sorts would merely distort the group averages.

TABLE 12. LAND CLASS AND VARIOUS FACTORS  
106 farms, Montgomery County, 1944-45

Land class *	Average					
	Tons of hay per acre	Tons of silage per acre	Lbs. of grain per acre	Crop acres	Number of cows	Lbs. milk produced per cow
III	1.7	8.0	1189	85	22	6300
IV	1.7	7.1	1242	83	21	6931

\* An Economic Study of Land Utilization in Montgomery County, 1932. Cornell Agricultural Experiment Station Bulletin 613. By F. F. Hill and George T. Blanch.

Largely because of the higher milk production per cow, the farms in land class IV produced milk somewhat cheaper and made somewhat higher labor incomes, on the average, than did the farms in land class III (table 13).

TABLE 13. LAND CLASS AND LABOR INCOME  
106 farms, Montgomery County, 1944-45

Land class	Number of farms	Average	
		Cost per cwt. milk	Labor Income
III	70	\$4.35	\$1,650
IV	36	3.98	1,857

Having thus largely eliminated or held constant the influence of prices, type of farming and land class, farm management practices or factors will be examined to explain the variations in costs and incomes that have been reported.

#### Milk Production Per Cow

As was to be expected, the rate of milk production per cow was highly important in accounting for the farm-to-farm differences in the cost of producing 100 pounds of milk and in the labor income. On 21 of the farms, 7,800 or more pounds of milk per cow was produced. The average cost of producing milk was only \$3.44 per 100 pounds, and the labor income averaged \$3,356 (table 14). In contrast to this group, on 23 farms with less than 5,200 pounds of milk per cow, the cost was \$5.47 per 100 pounds, and the labor income was only \$490. Costs and incomes for the intermediate groups were in between these extremes.

TABLE 14. MILK PRODUCED PER COW AND LABOR INCOME  
106 farms, Montgomery County, 1944-45

Pounds of milk produced per cow	Number of farms	Lbs. milk produced per cow	Average	
			Cost per cwt. milk	Labor income
Less than 5200	23	4,370	\$5.47	\$ 490
5200 to 6499	36	5,792	4.18	1,234
6500 to 7799	26	7,104	3.81	2,161
7800 or more	21	9,371	3.44	3,356

The amount of hay fed per cow was about the same in each of the four production-per-cow groups, but the rates of grain and silage feeding per cow increased rapidly as the amount of milk per cow increased (table 15).

TABLE 15. MILK PRODUCED PER COW AND FEEDING PRACTICES  
106 farms, Montgomery County, 1944-45

Pounds milk produced per cow	Average			Pounds of grain per cwt. milk
	Amount per cow			
	pounds of grain	tons of hay	tons of silage	
Less than 5200	1,348	2.6	2.6	31
5200 to 6499	1,917	2.6	3.4	33
6500 to 7799	2,681	2.7	4.2	38
7800 or more	3,095	2.5	4.5	33

Little or no relation was found between the amount of milk produced per cow and size of herd, cows per man, or man hours per cow, except that in the group with the lowest level of milk production, the herds were a little smaller, on the average, and somewhat more labor was used per cow (table 16). Also crop yields were slightly lower on these farms.

TABLE 16. MILK PRODUCED PER COW AND VARIOUS FACTORS  
106 farms, Montgomery County, 1944-45

Pounds milk produced per cow	Number of farms	Number of cows	Average		Crop index
			Cows per man	Man hours per cow	
Less than 5200	23	19	12	202	92
5200 to 6499	36	21	12	179	101
6500 to 7799	26	23	12	183	113
7800 or more	21	22	11	177	104

Among the practices associated with different rates of milk production that were studied were seasonality of milk production, rates of grain, hay and silage feeding, and rate of replacing the cows in the herds.

Seasonality of milk production. The rate of milk production per cow was lowest in the summer dairies and highest in the winter dairies. Largely because of having better cows, labor incomes averaged highest in the winter dairies, next highest in the even dairies and lowest in the summer dairies (table 17). The important point is that a high level of milk output per cow is associated with year-round or winter dairying. Farms from two groups (not enough farms in the winter dairy group) were matched on milk production per cow so that the average was about the same in each group. Under those conditions there was no significant difference in profits between the summer dairies and the even dairies.

TABLE 17. SEASONALITY OF MILK PRODUCTION  
101 farms\*, Montgomery County, 1944-45

Season of production	Number of farms	Lbs. milk		Cost per cwt. milk	Return per cwt. milk	Labor income
		sold daily November	produced per cow			
<u>All Farms</u>						
Summer dairies	59	242	5,927	\$4.43	\$4.09	\$1,198
Even dairies	31	383	7,048	3.94	4.11	2,284
Winter dairies	11	472	8,027	4.05	4.22	3,021
<u>Farms Matched On Milk Production Per Cow</u>						
Summer dairies	23	237	6,139	\$4.00	\$4.10	\$1,575
Even dairies	23	311	6,170	4.19	4.12	1,658

\* 3 spring dairies and 3 other dairies not included.

Even dairies: Includes all dairies whose daily deliveries in their low quarter were 65 per cent or more of those in their high quarter. (In the following groups the daily deliveries in the low quarter were less than 65 per cent of those in the high quarter.)

Summer dairies: High quarter in April, May, June; or July, August, September. Low quarter in October, November, December; or January, February, March.

Winter dairies: High quarter in October, November, December; or January, February, March. Low quarter in April, May, June; or July, August, September.

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Grain fed per cow. The amount of grain fed per cow varied widely between groups of farms. On 28 farms less than 1,500 pounds of grain was fed per cow. The average amount of milk produced per cow was only about 4,800 pounds (table 18). But on 20 other farms 3,100 or more pounds of grain was fed, and on these farms the rate of milk production averaged about 8,100 pounds per cow. The farmers who fed grain heavily also fed more silage and a little more hay per cow than did the light grain feeders. The milk price relationship was favorable in this period and it paid to feed grain heavily.

TABLE 18. GRAIN FED PER COW AND VARIOUS FACTORS  
106 farms, Montgomery County, 1944-45

Pounds of grain per cow	Number of farms	Lbs. of grain per cow	Tons of hay per cow	Average		Lbs. milk produced per cow	Cost per cwt. milk	Labor income
				Tons of silage per cow	Lbs. milk produced per cow			
Less than 1500	28	1,125	2.5	2.8	4,821	\$4.84	\$ 690	
1500 to 2299	25	1,820	2.5	3.5	6,108	4.01	1,675	
2300 to 3099	33	2,618	2.6	3.9	7,288	3.98	2,233	
3100 or more	20	3,565	2.8	4.5	8,115	4.03	2,374	

Hay fed per cow. Heavy feeding of hay per cow was not accompanied by increased milk production. In fact, the farms on which heavy feeding of hay was done actually got somewhat less milk per cow. Unfortunately, no objective measure of hay quality was obtainable. The farmers who fed the most hay per cow also fed the most grain per cow, but they fed a smaller amount of silage per cow. Costs were higher and incomes were lower than on the farms with more moderate feeding of hay (table 19).

TABLE 19. HAY FED PER COW AND VARIOUS FACTORS  
106 farms, Montgomery County, 1944-45

Tons of hay per cow	Number of farms	Tons of hay per cow	Lbs. of grain per cow	Average		Lbs. milk produced per cow	Cost per cwt. milk	Labor income
				Tons of silage per cow	Lbs. milk produced per cow			
Less than 2.2	25	1.9	1,580	4.0	6,768	\$3.84	\$2,723	
2.2 to 2.5	28	2.4	1,611	3.6	6,582	4.23	1,349	
2.6 to 2.9	23	2.7	1,622	3.5	6,304	4.23	1,541	
3.0 or more	30	3.3	1,730	3.5	6,400	4.53	1,369	

Silage fed per cow. The farms with no silage had the lowest average rate of milk production (table 20). Grain feeding was light, but the hay consumption per cow was large. The heavier the rate of silage feeding, within the limits of experience of these farmers, the higher the milk production per cow. Those who fed heaviest of silage also fed more grain, but hay feeding per cow was about average. The farms on which the most silage was fed per cow had the lowest average cost of milk and the highest average income, largely because of the response of increased milk production per cow.

TABLE 20. SILAGE FED PER COW AND VARIOUS FACTORS  
106 farms, Montgomery County, 1944-45

Tons of silage per cow	Number of farms	Average					
		Tons of silage per cow	Lbs. of grain per cow	Tons of hay per cow	Lbs. milk produced per cow	Cost per cwt. milk	Labor income
None	11	0	1,791	3.1	5,809	\$4.48	\$1,045
Less than 3.4	33	2.7	2,030	2.5	6,158	4.16	1,590
3.5 to 4.9	40	4.1	2,280	2.6	6,400	4.36	1,590
5.0 or more	22	5.6	2,582	2.5	7,609	3.94	2,492

Proportion of cows replaced. The rate of turnover in the herds in this area was related to the rate of milk production per cow and to incomes. Those farmers who replaced only a small proportion of the cows in their herds had low milk production per cow and fared none too well financially (table 21). And other farmers who, because of mastitis in the herds or for other reasons, lost many cows out of their herds likewise had low production and low incomes. The cost of producing milk in this latter group was relatively high, due in part at least to the heavy depreciation on cows. The highest milk production per cow and the highest incomes were attained by those who replaced a moderate proportion, averaging 24 per cent, of the cows in their herds.

TABLE 21. PROPORTION OF COWS REPLACED AND LABOR INCOME  
106 farms, Montgomery County, 1944-45

Per cent of cows replaced	Number of farms	Average				
		Per cent of cows replaced	Number of cows	Lbs. milk produced per cow	Cost per cwt. of milk	Labor income
Less than 10	33	4	20	6,073	\$4.07	\$1,426
10 to 19	29	15	23	6,855	4.10	1,807
20 to 29	20	24	21	7,480	4.08	2,434
30 or more	24	43	22	5,904	4.71	1,425

Crop Yields

Yield per acre of hay. Hay was the most important crop, occupying more than one-half of the crop area. The farms with high yields of hay tended to be more successful than those with low yields (table 22). A more complete analysis of crop yields and related factors is given in the section on crop index.

TABLE 22. YIELD PER ACRE OF HAY AND LABOR INCOME  
106 farms, Montgomery County, 1944-45

Tons per acre of hay	Number of farms	Average	
		Tons per acre of hay	Labor income
Less than 1.3	20	1.0	\$1,082
1.3 to 1.6	34	1.5	1,640
1.7 to 2.0	31	1.9	2,061
2.1 or more	21	2.4	1,955

Yield per acre of corn silage. Eleven farms did not have corn for silage (table 23). The size of herd was small and the rate of milk production was relatively low on these farms. Consequently, the cost per 100 pounds of milk was higher and the labor income lower than on the farms with silage. Among the farms which had silage, the average size of herd was about the same irrespective of the yield per acre, but the rate of milk production and the labor income were the highest and costs the lowest in the group of farms with the highest silage yields.

TABLE 23. YIELD PER ACRE OF CORN SILAGE AND LABOR INCOME  
106 farms, Montgomery County, 1944-45

Tons of silage per acre	Number of farms	Tons of silage per acre	Number of cows	Average		
				Lbs. milk produced per cow	Cost per cwt. of milk	Labor income
None	11	----	14	5,809	\$4.48	\$1,045
Less than 7	36	5.1	22	6,428	4.13	1,636
7 to 9	35	7.9	23	6,431	4.37	1,513
10 or more	24	11.2	22	7,088	4.04	2,458

Crop index. A crop index for each farm was calculated to express the yields of the important crops in per cent of the average of the area. On the farms with a crop index of 120 or higher, the average yield per acre of hay was 2.3 tons and of corn silage 10.8 tons; on the farms with a crop index of less than 80, the hay yield was 1.1 tons and the silage yield 4.5 tons.

The size of herd was about the same in the group of farms with different crop yields, except that the group of farms with the lowest yields had somewhat smaller herds on the average (table 24). A striking fact was that the farms with high yields were much more heavily stocked with cattle. On the farms with a crop index of less than 80 the crop acres per cow averaged 5.4, but on the farms with a crop index of 120 or more the acres of crops per cow were only 3.1. Also, as the crop yields increased from group to group, the rate of milk production per cow increased. Good crops and good cows went together on these farms.

TABLE 24. CROP INDEX AND VARIOUS FACTORS  
106 farms, Montgomery County, 1944-45

Crop Index	Tons		Average		
	per acre of hay	per acre of silage	Number of cows	Crop acres per cow	Lbs. milk produced per cow
Less than 80	1.1	4.5	18	5.4	5,784
80 to 99	1.5	6.5	23	3.9	6,394
100 to 119	1.8	8.3	22	3.7	6,494
120 or more	2.3	10.8	22	3.1	7,317

The advantage of high-yielding crops was reflected in the labor income as well as in the rate of milk production per cow. With low yields, the average labor income was about \$1,000, whereas with high yields it was nearly \$2,500 (table 25). Much of the difference in incomes is attributable to the better crop yields, although it is obvious the somewhat larger herds and higher rates of milk production were also contributing factors.

TABLE 25 CROP INDEX AND LABOR INCOME  
106 farms, Montgomery County, 1944-45

Crop index	Number of farms	Average	
		Crop index	Labor income
Less than 80	19	65	\$1,096
80 to 99	33	91	1,669
100 to 119	31	111	1,612
120 or more	23	138	2,456

#### Combination of Enterprises

Systems of dairy farming. Enterprises other than the cows and feed crops were unimportant on these farms. Of course, there was some variation from farm to farm in the amounts of feed crops, young stock, chickens, work off the farm, and other minor jobs. On the average, 63 per cent of the total



work units were on cows. On the straight dairy farms (those with more than 70 per cent of the work units on cows) the labor income was a little lower than on the farms with more of these other minor enterprises (table 26). But this smaller income was in part due to a lower rate of milk production. The average labor incomes indicate that either extreme might well be avoided in this area.

TABLE 26. SYSTEMS OF DAIRY FARMING AND LABOR INCOMES  
106 farms, Montgomery County, 1944-45

System of dairy farming*	Number of farms	Per cent work units on cows	Average		Total work units	Labor income
			Number of cows	Lbs. milk produced per cow		
Straight dairy	31	75	24	5,977	509	\$1,394
Mixed	49	66	22	6,753	529	2,031
Dairy and others	26	54	18	6,704	531	1,525

\* The sort ranges on per cent of work units on cows were: less than 60, 60 to 70, and 71 or more.

Proportion of cow feed which was home grown. For all farms in the study, slightly more than one-fourth of the total concentrates fed to cows were home grown grain. On 23 of the farms, none of the grain fed to cows was home grown, whereas on 22 others nearly 60 per cent was so raised (table 27).

TABLE 27. PROPORTION OF COW FEED WHICH WAS HOME GROWN  
AND LABOR INCOME  
106 farms, Montgomery County, 1944-45

Per cent cow feed which was home grown	Number of farms	Per cent cow feed which was home grown	Average		Labor income
			Number of cows	Lbs. milk produced per cow	
None	23	0	20	6,135	\$1,659
0 to 24	33	14	21	6,985	1,753
25 to 39	28	33	24	6,743	1,941
40 or more	22	57	21	5,914	1,454

Partially because of the fluctuation in other important factors, there was no clearcut relation between the practice of feeding home grown grain and labor income. If anything, the figures suggest that having a moderate proportion of home grown grain to feed was the most profitable practice.

### Size of Farm Business

Number of cows. The average size of herd was 22 cows per farm, but there was considerable variation in size of herd from farm to farm.

Fewer than 15 cows were kept on 19 of the farms (table 28). The amount of milk produced per cow in these small herds averaged only about 5,300 pounds per cow. They were thus at a disadvantage relative to both size and production with the result that the cost of producing milk was relatively high and incomes were low, on the average. In the other size-of-herd groups, the rate of milk production per cow tended to average about the same. The average cost of producing milk fluctuated irregularly, but the average labor income increased as the size of herd increased.

TABLE 28. NUMBER OF COWS AND LABOR INCOME  
106 farms, Montgomery County, 1944-45

Number of cows	Number of farms	Number of cows	Average		
			Pounds milk produced per cow	Cost per cwt. of milk	Labor income
Fewer than 15	19	11	5,353	\$5.04	\$ 570
15 to 20	37	18	6,759	4.09	1,552
21 to 26	23	23	6,739	4.28	1,782
27 or more	27	33	6,804	3.78	2,708

Reference is frequently made to one-man farms, two-man farms and so on. The farms in this study were grouped into such a size classification for study.

Labor force. Ten of them were what might be called one-man farms. There were other small farms in this area, but only farms with 6 or more cows were enumerated in this study. The labor force on these farms, 1.2 man equivalent, consisted of the farmer himself and a little extra help, either family or hired. The operators were older than those on the larger farms. The size of herd averaged 10 cows, the crop area 40 acres, and the rate of milk production 5,100 pounds per cow (table 29).

TABLE 29. SIZE OF FARM BUSINESS AND VARIOUS FACTORS  
106 farms, Montgomery County, 1944-45

Size of farm business*	Man equivalent	Age of operator	Acres of crops	Average			
				Number of cows	Gans milk produced per man	Lbs. milk produced per cow	Crop index
One-man farms	1.2	61	40	10	1.4	5,100	91
Man-and-a-half farms	1.6	50	61	16	2.0	6,100	99
Two-man farms	2.0	47	97	25	2.7	6,876	107
Three-man farms	2.7	40	146	34	3.0	7,371	102

\* The sort ranges on total work units were: less than 300, 300 to 449, 450 to 799, and 800 or more.

Crop yields were below average and the amount of milk produced per man was low. The average cost of producing milk exceeded \$5.50 per 100 pounds and the labor income was low -- less than \$500. (table 30).

TABLE 30. SIZE OF FARM BUSINESS AND LABOR INCOME  
106 farms, Montgomery County, 1944-45

Size of farm business	Number of farms	Total work units	Average	
			Cost per cwt. milk	Labor income
One-man farms	10	246	\$5.51	\$ 459
Man-and-a-half farms	31	387	4.32	1,151
Two-man farms	58	602	4.01	2,115
Three-man farms	7	880	3.73	2,776

The majority of the farms, 58 of the 106, were two-man operations. They had, on the average, 25 cows, nearly 100 acres of crops, about 6,900 pounds of milk per cow, and crop yields 7 per cent above average. They produce milk fairly efficiently, about \$4.00 per 100 pounds, and were moderately successful.

Thirty-one farms were in between the one-man and two-man farms in size, and 7 of the farms were in the 3-man group. Milk was produced the most efficiently and incomes were the highest on these larger farms. These farms were operated by younger men. With 34 cows and nearly 150 acres of crops per farm, they produced approximately 7,400 pounds of milk per cow. Crop yields were about average. The efficiency with which labor was used, as indicated by the milk produced per man was the highest of any of the size group and this was one of the important factors accounting for their financial success.

Changes in size. Among the 28 identical farms, 2 had fewer than 10 cows each in the early period, but none of the herds was that small in 1944-45. Only 3 farms had 30 or more cows in 1932-33, but 9 had attained such a size in 1944-45.

In the 12-year period, 6 of the 28 farms decreased their number of cows, and 4 remained the same. Three farms increased their cow numbers 1 to 4 cows, 7 farms 5 to 9 cows, 5 farms 10 to 14 cows, and 3 farms 15 or more cows.

The acreage of crop land was increased about in proportion to the increase in number of cows, so that the crop area per cow remained constant.

The combining of farms in this area into larger units is an important adjustment that is taking place. It has been shown that many of the farms have already been increased in size. Similar changes will undoubtedly be made with other farms in the future.

Labor Efficiency

Cows per man. On 26 farms, fewer than 10 cows were cared for per man, whereas on a similar number of other farms 14 or more cows were kept per worker (table 31). Comparing these two groups, the average milk production per cow was about the same, but the size of herd was larger in the high-efficiency group. A 64-cents lower cost of milk production and a \$1,300 higher labor income accompanied the greater efficiency of labor and the larger herds.

TABLE 31. COWS PER MAN AND LABOR INCOME  
106 farms, Montgomery County, 1944-45

Cows per man	Number of farms	Cows per man	Number of cows	Average		
				Lbs. milk produced per cow	Cost per cwt. of milk	Labor income
Fewer than 10	26	8	15	6,169	\$4.57	\$ 826
10 to 11	29	10	20	6,686	4.48	1,402
12 to 13	23	12	24	7,300	3.87	2,618
14 or more	28	17	28	6,011	3.93	2,143

Milk produced per man. In terms of milk production per man, labor was used much more efficiently on some farms than on others. High output per man was obtained principally by these practices:

1. Keeping moderately large herds, which made possible
2. Spending less than the average amount of time per cow to do the chores in the stable, and yet
3. Having better-than-average producing cows.

The effect of these combined practices on costs and incomes was striking. On the 23 farms with less than 1.8 cans of milk produced per man, averaging 1.3 cans, the size of herd was only 14 cows, the man hours per cow 225, and the rate of milk production less than 5,000 pounds per cow. Under these conditions, production costs averaged \$5.34 per 100 pounds, and the labor income was only \$300 (table 32). In contrast to this group, on 32 farms with 3.0 or more cans of milk per man, the herds averaged 26 cows, the chores were done in about 150 hours per cow, and yet the milk production equalled 7,800 pounds per cow. Costs averaged only \$3.74 per hundredweight and the labor income was nearly \$3,000, or 10 times that on the low-efficiency farms (see front cover page).

TABLE 32. AMOUNT OF MILK PRODUCED PER MAN AND LABOR INCOME  
106 farms, Montgomery County, 1944-45

Cans milk produced per day per man	Number of farms	Cans of milk produced per day per man	Number of cows	Average			
				Man hours per cow	Lbs. milk produced per cow	Cost per cwt. of milk	Labor income
Less than 1.8	23	1.3	14	225	4,917	\$5.34	\$ 300
1.8 to 2.3	30	2.0	21	202	6,100	4.20	1,292
2.4 to 2.9	21	2.7	24	169	6,890	3.77	2,012
3.0 or more	32	3.4	26	149	7,803	3.74	2,952

Combined Effect of Important Factors

The combined effect of these factors on costs and incomes may be shown by contrasting the results on the farms that were below average with those on the farms that were average or above. On the 16 farms that were below average in number of cows, cows per man, crop yields and milk per cow, the cost of producing milk averaged \$4.83 per 100 pounds and the labor income was less than \$500 (table 33). By comparison, the cost was only \$3.49 and the labor income exceeded \$4,500 on the 8 farms that were above average in these factors.

TABLE 33. COMBINED EFFECT OF IMPORTANT FACTORS  
107 farms, Montgomery County, 1944-45

Group	Number of farms	Average	
		Cost per cwt. milk	Labor income
Below average in 4 factors *	16	\$4.83	\$ 458
Average	107	3.91	1,764
Average or above in 4 factors *	8	3.49	4,544

\* The four factors were milk produced per cow, crop index, number of cows, and cows per man.

Some Successful Farms

The application to the individual farms of some of these relationships of the factors to costs and incomes may be shown by some examples.

Farm A is an example of farm business uniformly good in all of the important factors. It was a 2-man business, a father and son working together. They operated a 157-acre farm with 26 cows and 89 acres of crops. The crops consisted of 15 acres of corn, 14 acres of oats and 60 acres of mixed hay. The hay yield per acre was 2.0 tons, the silage yield 8 tons and the oat yield 43 bushels per acre. The milk production averaged 7,219 pounds per cow. For the year, 3.0 cans of milk was produced per man per day. Thus, the business was slightly above average in rates of production, size and labor efficiency. As a result, the labor income was about \$2,150.

Farm B was also essentially a 2-man business but with enough extra help to make a man equivalent of 2.3. A herd of 30 cows was kept on this 150-acre farm, of which 75 acres were cropped. The crops were 43 acres of hay, mostly alfalfa that yielded 2.9 tons per acre, 14 acres of corn for silage with a yield of 12 tons and 11 acres of oats and barley that made 52 bushels per acre. Two acres of soybeans were also raised.

Somewhat more than the usual amount of young stock was raised. The herd produced 10,223 pounds of milk per cow. They were fed, on the average, 3,300 pounds of concentrates, 2.7 tons of hay and 4.6 tons of silage per cow. The amount of milk produced per man was 4.2 cans per day. Thus, this

farm business was 36 per cent above the average of all farms in size, 73 per cent above in crop yields, 55 per cent above in milk production per cow, and 68 per cent above in amount of product per man. Consequently, milk was produced at a cost of only \$3.54 per 100 pounds and the labor income exceeded the \$5,000 mark.

There were several other well-organized farm businesses in the area. Averages for the 8 of them that were above the average in the important business factors are shown in table 34. These 8 farms had on the average 29 cows, 8,791 pounds of milk per cow, 2.2 tons of hay per acre and 10 tons of silage per acre. Such averages may well serve as standards of good farming in this area.

Variations in the factors for all 107 farms and these suggested standards are shown in the accompanying Farm Business Chart.

TABLE 34. COMPARISON OF GOOD FARMS WITH THE AVERAGE OF ALL FARMS  
107 farms, Montgomery County, 1944-45

Factors	8 farms above average in 4 factors	107 farms
<b>Size of business:</b>		
Total acres operated	168	159
Crop acres	91	87
Number of cows	29	22
Total work units	690	528
Man equivalent	2.3	1.9
<b>Labor efficiency:</b>		
Cows per man	13	12
Man hours per cow	154	184
Work units per man	300	285
Cans of milk produced per day per man	3.6	2.4
<b>Rates of production:</b>		
Pounds of milk produced per cow	8,791	6,605
Tons of hay per acre	2.2	1.6
Tons of corn silage per acre	9.9	7.3
Pounds of grain per acre	1,422	1,216
<b>Other factors:</b>		
Per cent of milk sold October-March	50	43
Pounds of grain fed per cow	3,004	2,265
Cost per hundred pounds of milk	\$ 3.49	\$ 3.91
Labor income	\$4,544	\$1,764

### Conclusions

Commonly regarded as predominantly commercial dairy type-of-farming country, this area actually had in it a great many non-commercial farms, both dairy and other, and rural non-farm residences. In 1944-45, at least one farm out of every 4 was other than a commercial dairy farm in operation. And for every commercial dairy farm there was one rural residence. Most of these residences were former farm homes that became available as a result of the combining of farms into larger units.

These 107 commercial dairy farms had, on the average, 22 cows that produced 6,605 pounds of milk per cow. The man equivalent was 1.9. The farms averaged nearly 160 acres in size, of which 87 acres were cropped. The crop land was used mostly for feed crop production. The yield of hay was 1.6 tons per acre and of corn silage 7 tons per acre. Although used almost exclusively for feed crop production, the crop area per cow was somewhat larger than in some other dairy areas of the State.

With a total capital investment of nearly \$17,000 per farm, the average labor income was \$1,764. Compared with 12 years earlier, production efficiency had increased gradually, and incomes had changed from deep depression to prosperity.

The average cost of producing milk, on the enterprise basis, was \$3.91 per 100 pounds. Thirty-four pounds of concentrates, 77 pounds of hay, 114 pounds of corn silage, 2.4 days of pasture, and 2.6 hours of man labor were required in the production of 100 pounds of milk. The cost of producing milk about doubled during World War II.

High milk production per cow was essential to low cost of production and financial success. Considerable more grain and some more silage was fed per cow on the farms with high-producing cows, but it was profitable to do so. Summer dairies were the least profitable, largely because they had the lowest-producing cows. Farms with about one-fourth of the cows replaced during the year were more profitable than either extreme, largely because such replacement was associated with the highest amount of milk per cow. Moderate specialization on the cow enterprise was more profitable than either great emphasis on cows or having many other jobs or enterprises in addition to the cows. Likewise, having a moderate proportion, 15 to 30 per cent, of home grown grain proved best.

High-yielding crops and good cows went together on these farms. The farms with high yields were much more heavily stocked with cattle than were the farms with low yields.

Because of favorable price conditions, large size of farm business was unusually profitable in 1944-45. Perhaps the most significant adjustment taking place in this area is the combining of farms into larger units. From 1932-1933 to 1944-45, the average number of cows per farm on 28 identical farms increased from 20 to 25. In 1944-45, about 1 farmer in 3 rented land to operate in addition to what he owned, thus increasing the size of business.

An important key to production efficiency and a good income was a large output of milk per man. More than twice as much milk was produced per man on some farms as on others. These high-output-per-man farms had moderately large herds of good cows in which the labor force spent less the average amount of time per cow on the dairy chores.

VARIATION IN IMPORTANT FARM BUSINESS FACTORS  
107 farms, Montgomery County, 1944-45

SIZE OF BUSINESS				USE OF LABOR			RATES OF PROD.			OTHER	COST PER CWT. MILK	LABOR INCOME
Total acres operated	No. of cows	Total work units	No. of men	Cows per man	Work units per man	Cans milk per man	Lbs. milk per cow	Tons hay per acre	Tons silage per acre	Lbs. grain per cow		
343	41	967	3.2	20	455	4.1	10600	2.8	13	3900	\$2.76	\$5498
239	32	752	2.4	16	368	3.4	8300	2.1	11	3230	3.31	3328
196	28	677	2.2	14	326	3.1	7510	2.0	10	2900	3.50	2544
182	23	585	2.1	13	309	2.8	7064	1.9	9	2627	3.70	2067
152	21	528	2.0	12	288	2.5	6518	1.7	8	2382	3.92	1732
130	20	492	1.9	11	272	2.2	6145	1.6	7	2091	4.17	1463
119	19	444	1.7	10	250	2.0	5664	1.5	6	1745	4.39	1186
104	17	401	1.4	10	230	1.8	5264	1.4	6	1455	4.66	725
90	14	343	1.2	8	210	1.5	4791	1.2	5	1255	5.15	318
63	10	251	1.1	7	172	1.0	3882	0.9	3	845	6.98	-675

There are ten numbers in each column. The number at the top of each column is the average of the highest one-tenth of the farms for that factor. The other figures are the averages of the remaining 10-per cent groups. The columns are independent of each other. The shaded bars show the average organization of the 8 farms that excelled in the important farm business factors.