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A SUMMARY OF  
STUDIES OF THE COST OF PRODUCING MILK  
IN NEW YORK, VERMONT AND PENNSYLVANIA

Presented at a Conference of Dairy Leaders  
Held at Ithaca, New York  
September 30, 1941

Department of Agricultural Economics and Farm Management  
New York State College of Agriculture, Ithaca, New York

A. E. 365

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C. E. Ladd

In September, 1941, Mr. Owen D. Young and the boards of directors of five cooperative groups of dairymen, asked the three state colleges in New York, Pennsylvania, and Vermont to make a survey of all available data dealing with the cost of producing milk, and to report their findings to the officers of the farm organizations.

On September 30, 1941, the officers of the following organizations, with Mr. Young, met in Warren Hall, Ithaca, New York, to hear and review the results of studies of cost of producing milk as made in the three states:

Eastern Producers Cooperative Association  
Dairymen's League Cooperative Association  
Dairy Farmers Union  
Associated Independents  
Metropolitan Producers Bargaining Agency

At this conference, data were presented from each of the three states and covering many different years of milk production. The data were remarkably uniform for the three areas, but the student of milk costs will be particularly interested in how differences in climate, grade of milk produced, type of farming, and distance to markets are reflected in these tables. These data deal only with costs. At the conference on September 30, various factors affecting price were presented for the general information of the group, and these are available in other mimeographed publications from the College.

From the rather large mass of data presented at the conference, there have been selected a small number of tables which seem most important, and these are presented in this mimeographed circular. Table 1, on page 4, gives the summary of costs for New York, Vermont, and Pennsylvania, placed side by side.

It should always be remembered that cost data must of necessity be for a period that is already past, and so will not truly reflect conditions of today or conditions as they may exist six months hence. Because of this, all costs have been stated in quantities as well as in the money values, and statements have been appended to make it possible for the reader to compute new costs as changes in prices per unit make this necessary.

## SUMMARY OF MILK PRODUCTION COSTS

W. I. Myers

In considering the cost of milk production for the New York milk shed, it should always be remembered that there are wide variations in costs between different farms. In presenting data for studies in different regions, Dr. Misner and the other speakers have emphasized the fact that costs of production varied widely from farm to farm within each region. The results have also shown considerable variation between the average costs of the different dairy farming regions considered. These variations are due to many factors such as distance to market, proportion of milk produced on pasture, quality of land, type of hay and other feed produced on the farm, and many other factors. Any average cost of milk production for a region, a state, or a milk shed should be considered in the light of these conditions.

The major purpose of research studies on the cost of milk production is to help dairy farmers increase their efficiency and profits by determining the important factors affecting costs and returns of milk production. Many different types of studies are used for this purpose including complete farm cost-accounts, dairy herd improvement records, simple farm accounts, and farm-management surveys; and all of them are useful. Another important purpose of such research studies is to determine the average cost of milk production as one important guide to public agencies in price determination. Farm-management surveys are the most useful type of study for this purpose since they usually include a fair sample of farms and regions and provide a more accurate cross-section of actual costs for the areas which are included.

The physical quantities and estimated average costs of production per hundred pounds of milk for New York, Vermont, and Pennsylvania are shown on the accompanying sheet (table 1). The average of many investigations in New York shows that 30 pounds of concentrates, 70 pounds of dry forage, 110 pounds of succulents and 2-1/2 hours of direct labor were required to produce 100 pounds of milk. The physical quantities of these requirements per 100 pounds of milk were similar in Vermont except that less grain and more hay were used. The average of the Pennsylvania studies shows a slightly larger quantity of concentrates but somewhat lower requirements for dry forage, succulents and labor per 100 pounds of milk. The variations in the Pennsylvania averages may be due in part to a somewhat longer pasture season and to the higher average milk production per cow on the farms studied.

Estimates based on these research studies indicate an average cost of producing milk in the seven winter months of 1941-1942 in excess of \$3.00 per hundredweight. These estimates are based on September farm prices of grain and hay and an estimated farm labor rate of 35 cents per hour.

Any change in the price of any of these items would, of course, result in a corresponding change in the cost of producing milk. Based on the New York data, a change of \$1.00 per ton in the price of grain would change the cost of producing 100 pounds of milk 1.5 cents, \$1.00 a ton in the price of hay 3.5 cents, \$1.00 in the value of silage, 5.5 cents and five cents per hour in the labor rate 12.5 cents.

In attempting to combine the average costs for each of these three states into an average cost of milk production for the New York milk shed, the relative importance of each state to this market should be considered.

Reports of the Market Administrator show that during the past year, 78.3 per cent of the pooled milk was obtained from New York, 13.5 per cent from Pennsylvania, 4.4 per cent from Vermont, 3.2 per cent from New Jersey and 0.6 per cent from other states.

Even at best, changes in prices by regulatory bodies tend to lag because of the time required for public hearings and for formal action. In a time like the present, when economic conditions are changing rapidly, this delay is of great importance to dairy farmers and to the public. If an increase in milk production in the next six to twelve months is to be obtained, it can take place only on dairy farms which are now producing milk. In this situation, it is highly important that the procedure of public agencies regulating the price of milk be speeded up in order to keep the price in line with increasing production costs and particularly with the cost of farm labor.

While the states represented in this conference have an important advantage in their proximity to great city markets, they also have a serious disadvantage in competition from cities for labor. Competition of defense and other industry has seriously reduced the farm labor supply at the present time and the situation is growing steadily worse. One-half of the dairy farms in New York have a man equivalent of two or less. This one-half of the farms produce only 37 per cent of the total milk supply. The other half of the dairy farms have a man equivalent of two or more but produce 63 per cent of the milk. That is, the dairy farms on which hired labor is important produce much more than their proportionate share of the milk supply on which cities depend.

With earnings of industrial workers at the highest point in our history, the ability of farmers to compete for family and hired labor is limited by the relatively low level of the prices of farm products. The scope of the defense program is increasing rapidly with the result that the competition from city industry for farm labor will become steadily more intense. From the standpoint of public welfare as well as the welfare of dairy farmers, the most important question is the provision of a price of milk high enough to permit farmers to retain the labor required to produce an adequate supply of this vital food.

TABLE 1.

SUMMARY OF

ESTIMATED COST OF PRODUCING MILK

IN NEW YORK, VERMONT AND PENNSYLVANIA

Items of cost	Average per 100 pounds of milk								
	New York			Vermont			Pennsylvania		
	Amt.	Pr.	Val.	Amt.	Pr.	Val.	Amt.	Pr.	Val.
Concentrates	30 lbs	2.0¢	\$0.60	22 lbs	2.1¢	\$0.46	32 lbs	2.0¢	\$0.64
Dry forage	70 lbs	0.625¢	0.44	94 lbs	0.6¢	0.56	59 lbs	0.5¢	0.30
Succulents	110 lbs	0.25¢	0.28	116 lbs	0.25¢	0.29	82 lbs	0.25¢	0.21
Pasture			0.13			0.12			0.14
Labor	2.5 hrs	35.0¢	0.88	2.6 hrs	35.0¢	0.91	2.1 hrs	35.0¢	0.74
Other costs			0.63			0.50			0.74
Total costs			\$2.96			\$2.84			\$2.77
Credits for									
Manure, calves and misc.			0.27			0.22			0.18
Net Year Cost			\$2.69			\$2.62			\$2.59
7 month winter cost (Year cost x 1.17)			\$3.15			\$3.07			\$3.03

Related Factors

Per cent fat test of milk 3.5 - 3.6

Pounds of milk produced per cow 6300

3.74

5350

3.9

7096

Source: Compiled from unpublished data from New York State College of Agriculture, Vermont State Agricultural College and Pennsylvania State College.

TABLE 2

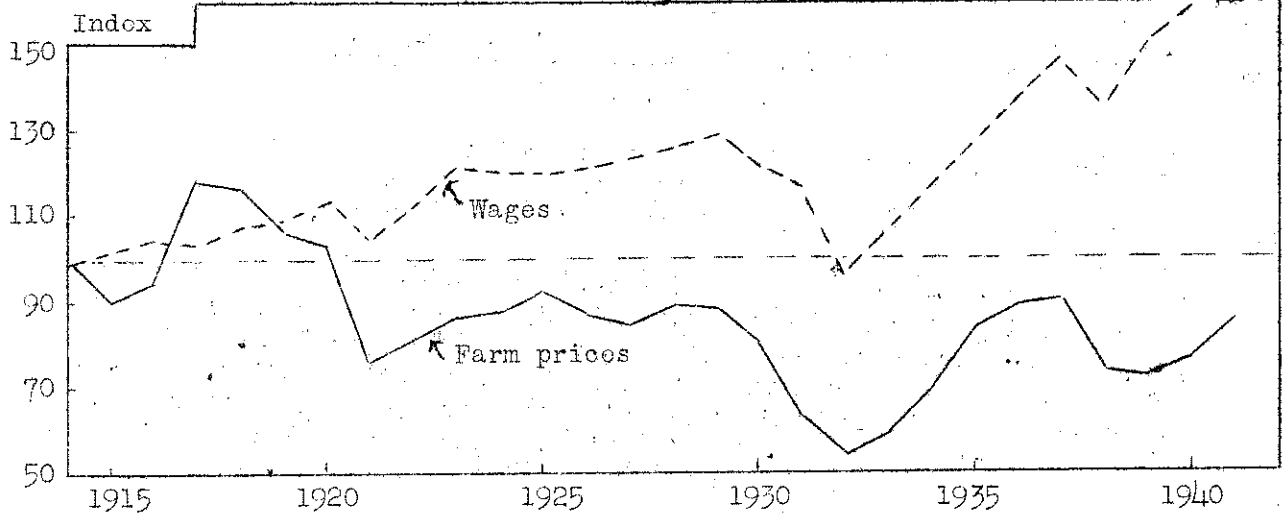


FIGURE 5. PURCHASING POWER OF FARM PRICES IN TERMS OF ARTICLES FARMERS BUY AND OF WEEKLY WAGES OF FACTORY WORKERS IN TERMS OF THE COST OF LIVING, 1914-41. 1910-14 = 100.

The purchasing power of farm products declined violently in the deflation of 1920-21 and 1929-32. Although substantial improvement has occurred, it is still far below the purchasing power of earnings of factory workers.

TABLE 3

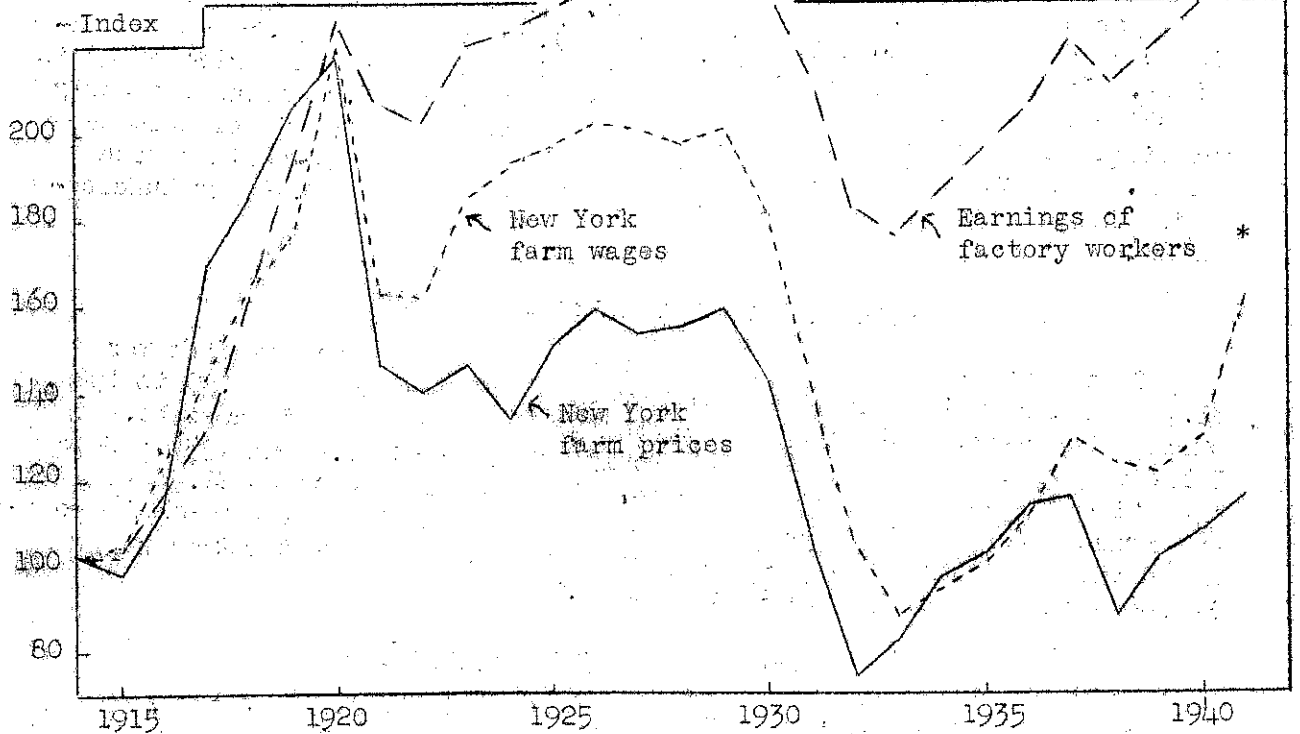


FIGURE 6. NEW YORK FARM PRICES OF FARM PRODUCTS, FARM WAGES, AND WEEKLY EARNINGS OF FACTORY WORKERS. 1910-14 = 100.

In an industrial region like New York, farm wages are a compromise between farm prices and factory wage rates. The present relatively low level of farm prices limits the ability of farmers to compete with factories for labor.

LCC41:146 STUDIES OF THE COST OF PRODUCING MILK IN NEW YORK

L. C. Cunningham

In New York, data concerning the cost of producing milk have been collected by farm surveys of large numbers of farms and by complete farm cost accounts on a selected group of farms for about 30 years.

The first farm-to-farm survey of the cost of producing milk in New York was made in 1912 in Delaware County. In all, 27 different studies including nearly 3,000 farm-years were made by the survey method up to 1941. The farms included in the various studies were in 11 different counties. Sixteen studies were made in grade B areas, six in grade A, two in condensery, and one in a cheese-factory area. In the first study made in 1912 and 1913, the farms were engaged in the production of standard-grade milk.

The cost of producing milk on cost-account farms in New York has been reported since 1914. The number of farms included was around twenty to thirty in the early period and around fifty for later years. These farms, which are larger in size and have higher rates of production generally than the average of all farms, are distributed fairly well over the State.

Money Costs on Survey Farms

Based on the surveys, the lowest cost of production per 100 pounds of milk was found in 1914-15 (Broome County). With the price of purchased grain at \$30 a ton and labor charged at 14 cents an hour, the average cost was reported to be \$1.69 a hundredweight. The highest cost of milk production was found in 1918-19 (Herkimer County), amounting to \$3.60 a hundredweight. In the period covered by this particular study, the price of grain was \$62 a ton and labor was charged at 35 cents an hour. During the early twenties, the cost of producing milk was approximately \$2.50 per hundredweight. The average net cost of producing milk for the 12-month period ending April 30, 1940 on 536 farms in 5 areas was about \$2.25 per hundredweight.

Money Costs on Cost-Account Farms

On the cost-account farms, the average cost of producing milk was \$1.72 a hundredweight in 1914. The average cost was nearly \$3.50 in 1920. During the twenties the cost fluctuated around \$2.60 a hundredweight. Following 1930, the cost declined slowly and reached \$1.81 in 1935. Since that time the cost has tended to rise. In 1940, the cost was \$1.90 per hundredweight. The increase in average milk production per cow on the cost-account farms during this 27-year period was somewhat greater than the increase on all dairy farms in the State.

Amounts of Feed and Labor on Survey Farms

Feed and labor requirements per hundredweight of milk varied widely, depending on the system of dairy farming followed. In one area (Jefferson County, 1921-22), where summer dairying is the usual practice, only 18 pounds of grain were fed per 100 pounds of milk produced, while in another area (Orange County, 1930-31), which is a typical winter dairy section, 43 pounds of grain were fed per 100 pounds of milk produced. In Jefferson



County only 23 per cent of the milk was sold in the months of October to March, while in Orange County 55 per cent was sold in these winter months.

The amount of hay fed per 100 pounds of milk produced varied from 51 pounds in Chenango County in 1923-24 to 97 pounds in Herkimer County in 1918-19. However, 123 pounds of silage were fed in Chenango County as compared with only 62 pounds in Herkimer County. The days of pasture per 100 pounds of milk produced varied from 2.0 to 3.3 days.

From 2.3 to 2.9 hours of labor were required per 100 pounds of milk in most of the areas studied.

For the period 1914-40, the average of 23 studies showed 30 pounds of grain, 70 pounds of hay, 111 pounds of silage, and 2.5 hours of labor required per 100 pounds of milk produced.

#### Amounts of Feed and Labor on Cost-Account Farms

On cost-account farms for the 25-year period 1914 to 1938, 31 pounds of grain 57 pounds of hay, 100 pounds of silage, and 2.0 hours of labor were required to produce 100 pounds of milk. These quantities, particularly for labor, are somewhat smaller than on the average of all farms as reflected by the surveys, because the cost-account farms have larger herds, higher rates of milk production and more equipment.

TABLE 4.

COST OF PRODUCING MILK IN NEW YORK  
AS REPORTED BY FARM SURVEYS\*

Year	County	Grade of milk	Price	Labor	Milk	Propor-	Cost of
			per ton pur- chased grain	charge per hour	pro- duced per cow	tion of milk sold October to March	produc- ing 100 pounds of milk
			Dollars	Cents	Pounds	Per cent	Dollars
1911-12	Delaware	...	31	15	4,644	..	2.35 <sup>†</sup>
1912-13	Delaware	...	29	15	4,695	..	2.03 <sup>†</sup>
1914-15	Broome	B	30	14	5,532	42	1.69
1918-19	Herkimer	Cond.	62	35	5,173	33	3.60
1921-22	Jefferson	Cheese	42	23	4,971	23	2.45
1921-22	Cortland (Tully)	A	39	31	6,337	49	2.79
1921-22	Chenango (Oxford)	A	38	26	5,724	43	2.59
1921-22	Chenango (Norwich)	Cond.	37	27	5,272	46	2.73
1921-22	Chenango (Earlville)	B	38	27	6,184	49	2.56
1921-22	Madison (Munnsville)	B	39	25	6,592	50	2.50
1922-23	Madison (Munnsville)	B	43	28	6,330	48	2.54
1922-23	Chenango (Earlville)	B	42	26	6,305	49	2.35
1923-24	Chenango (Earlville)	B	42	28	6,753	51	2.44
1924-25	Chenango (Earlville)	B	43	32	6,522	50	2.35
1925-26	Chenango (Earlville)	B	..	..	7,010	49	2.32
1930-31	Chenango (Earlville)	B	37	28	6,831	50	2.35
1930-31	St. Lawrence	B	41	27	6,448	35	2.55
1930-31	Cayuga	B	40	26	6,504	49	2.51
1930-31	Orange	A	38	30	7,104	55	2.70
1931-32	Cortland	A	..	32	6,884	..	2.17
1931-32	Cortland	B	..	30	6,717	..	2.14
1936-37	Cortland	A	36	30	7,327	52	2.33
1939-40	Orange	A&B	33	..	6,560	..	2.36
1939-40	Chenango	B	32	..	6,373	..	2.06
1939-40	Cayuga	B	34	..	6,966	..	2.17
1939-40	St. Lawrence	B & Cheese	33	..	6,324	..	2.02
1939-40	Cattaraugus	B & Cond.	32	..	5,687	..	1.87

\*Sources of Data, see next page.

† Herd cost.

## \*Sources of Data in Table 4.

Cost of Producing Milk on 174 Farms in Delaware County, New York. By A. L. Thompson. Cornell University Agricultural Experiment Station Bulletin 364.

An Economic Study of Dairying on 149 Farms in Broome County, New York. By E. G. Misner. Cornell University Agricultural Experiment Station Bulletin 409.

An Economic Study of Dairying on 163 Farms in Herkimer County, New York. By E. G. Misner. Cornell University Agricultural Experiment Station Bulletin 432.

Economic Studies of Dairy Farming in New York, I, II, III, IV, V, VI, VII, VIII, XIII. By E. G. Misner. Cornell University Agricultural Experiment Station Bulletins 421, 433, 438, 441, 442, 452, 455, 462, 696.

Economic Studies of Dairy Farming in New York, IX. By J. C. Neathling. Cornell University Agricultural Experiment Station Bulletin 483.

Economic Studies of Dairy Farming in New York, XII. By John R. Raeburn. Cornell University Agricultural Experiment Station Bulletin 644.

Seasonal Costs and Returns in Producing Milk in Orange County, New York. By L. C. Cunningham. Cornell University Agricultural Experiment Station Bulletin 641.

Factors Affecting Costs and Returns in Producing Milk. By L. C. Cunningham. Cornell Extension Bulletin 307.

Costs and Returns in Producing Milk in New York. Unpublished data by I. R. Bierly.

TABLE 5. COST OF PRODUCING MILK IN 1939-40\*  
542 farms surveyed in 5 areas in New York

	Cost of 100 pounds of milk produced					Average 5 areas
	Orange County	Chenango County	Cayuga County	St. Lawrence County	Cattaraugus County	
<u>Costs</u>						
<u>Feed</u>						
Concentrates	\$0.61	\$0.52	\$0.40	\$0.43	\$0.43	\$0.47
Dry forage	0.50	0.46	0.33	0.41	0.38	0.42
Succulents	0.20	0.27	0.37	0.22	0.15	0.25
Pasture	0.11	0.08	0.07	0.08	0.09	0.08
Total feed	1.42	1.33	1.17	1.14	1.05	1.22
Labor on cows	0.63	0.56	0.67	0.66	0.61	0.62
Depreciation on cows	0.13	0.06	0.07	0.03	0.03	0.06
Interest on cows	0.08	0.09	0.07	0.08	0.08	0.08
Milk hauling	0.10	0.08	0.14	0.11	0.12	0.11
Building use	0.06	0.05	0.07	0.06	0.05	0.06
Bull service	0.03	0.03	0.04	0.03	0.03	0.03
Equipment use	0.03	0.02	0.04	0.02	0.02	0.02
Bedding	0.01	0.02	0.04	0.03	0.02	0.02
Miscellaneous	0.06	0.06	0.10	0.06	0.05	0.07
Total costs	2.55	2.30	2.41	2.22	2.06	2.29
<u>Credits</u>						
Manure	0.11	0.15	0.15	0.11	0.11	0.13
Calves	0.07	0.08	0.09	0.08	0.07	0.08
Miscellaneous	0.01	0.01	+	0.01	0.01	0.01
Total credits	0.19	0.24	0.24	0.20	0.19	0.22
<u>Net cost</u> of milk produced	\$2.36	\$2.06	\$2.17	\$2.02	\$1.87	\$2.07

\*Unpublished data by Ivan Bierly

+Less than 0.005

TABLE 6. COST OF PRODUCING MILK IN NEW YORK AS REPORTED  
BY COST ACCOUNTS, 1914 TO 1940\*

Year	Labor charge per hour Cents	Milk produced per cow Pounds	Cows per farm Number	Cost of producing 100 pounds of milk Dollars
1914	25	6,856	17	1.72
1915	26	5,487	17	1.97
1916	30	6,758	20	1.87
1917	36	6,340	23	2.40
1918	40	6,010	22	3.06
1919	41	6,487	20	2.90
1920	44	6,169	17	3.48
1921	39	6,495	19	2.79
1922	38	6,323	19	2.31
1923	38	6,575	18	2.64
1924	39	6,778	19	2.80
1925	40	6,855	20	2.64
1926	43	7,005	18	2.61
1927	41	7,427	19	2.57
1928	43	7,617	18	2.66
1929	43	7,773	16	2.88
1930	43	7,327	18	2.87
1931	36	7,600	22	2.72
1932	30	7,704	24	2.11
1933	28	7,896	22	1.90
1934	28	7,994	21	1.97
1935	28	8,137	21	1.81
1936	30	8,356	21	2.00
1937	31	8,205	22	2.15
1938	29	8,558	21	1.86
1939	29	8,278	23	1.96
1940**	29	8,906	22	1.90

\*Sources of Data: Twenty-five years of Farm Cost Accounts. By P. S. Williamson. Cornell Extension Bulletin 439, and subsequent reports of results of cost accounts on New York farms.

\*\*Preliminary.

TABLE 7. COST OF PRODUCING MILK IN 1940\*  
29 Cost Account Farms in New York

	Per 100 pounds of milk produced
<u>Costs</u>	
<u>Feed</u>	
Concentrates	\$0.49
Dry forage	0.28
Succulents	0.24
Pasture	<u>0.10</u>
Total feed	1.11
Labor	0.49
Bedding	0.02
Depreciation on cows	0.05
Interest on cows	0.06
Hired milk hauling	0.09
Building use	0.05
Equipment use	0.05
Breeding costs	0.04
Horse work, auto, truck, tractor	0.03
All other	<u>0.12</u>
Total costs	\$2.11
<u>Credits</u>	
Calves	0.11
Manure	<u>0.10</u>
Total credits	0.21
<u>Net cost of milk produced</u>	<u>\$1.90</u>

\*Preliminary

Source: Division of Farm Cost Accounts, Department of  
Agricultural Economics and Farm Management,  
Cornell University.

TABLE 8. AMOUNTS OF FEED AND LABOR USED IN MILK PRODUCTION  
IN NEW YORK AS REPORTED BY FARM SURVEYS,  
1914 TO 1940

Year	County	Grade of milk	Amounts per 100 pounds of milk produced				
			Grain Pounds	Hay Pounds	Silage Pounds	Pasture Days	Labor Hours
1914-15	Broome	B	25	75	84	2.9	3.4
1918-19	Herkimer	Cond.	23	97	62	3.3	3.1
1921-22	Jefferson	Cheese	18	81	78	3.1	2.9
1921-22	Cortland (Tully)	A	33	56	160	2.4	2.6
1921-22	Chenango (Oxford)	A	31	78	105	2.9	2.6
1921-22	Chenango (Norwich)	Cond.	31	84	85	3.1	2.7
1921-22	Chenango (Earlville)	B	35	58	143	2.6	2.5
1921-22	Madison (Munnsville)	B	24	76	148	2.4	2.6
1922-23	Madison (Munnsville)	B	21	78	135	2.5	2.8
1922-23	Chenango (Earlville)	B	31	68	136	2.6	2.2
1923-24	Chenango (Earlville)	B	30	51	123	2.3	2.0
1924-25	Chenango (Earlville)	B	30	56	123	2.5	2.3
1925-26	Chenango (Earlville)	B	33	56	115	...	...
1930-31	Chenango (Earlville)	B	35	70	116	2.3	2.6
1930-31	St. Lawrence	B	29	79	80	2.4	2.9
1930-31	Cayuga	B	26	73	154	2.4	3.3
1930-31	Orange	A	43	67	28	2.2	2.5
1931-32	Cortland	A	..	..	..	..	2.4
1931-32	Cortland	B	..	..	..	..	2.5
1936-37	Cortland	A	30	56	126	2.0	2.1
1939-40	Orange	A & B	37	59	66	2.4	2.6
1939-40	Chenango	B	33	72	121	2.5	2.5
1939-40	Cayuga	B	29	61	181	2.3	2.9
1939-40	St. Lawrence	B & Cheese	27	85	101	2.5	2.9
1939-40	Cattaraugus	B & Cond.	28	81	74	2.9	2.8
1914-40	Average		30	70	111	2.6	2.5

Source: See Table 1.

TABLE 9. AMOUNTS OF FEED AND LABOR USED IN MILK PRODUCTION IN NEW YORK  
AS REPORTED BY COST ACCOUNTS\*

Year	Average per 100 pounds of milk produced			
	Grain Pounds	Hay Pounds	Silage Pounds	Labor Hours
1914	30	42	115	2.2
1915	32	58	137	2.9
1916	32	50	86	2.1
1917	29	64	91	2.0
1918	29	72	94	2.3
1919	32	57	88	2.2
1920	30	52	124	2.2
1921	30	71	109	2.3
1922	27	49	118	2.5
1923	30	63	115	2.4
1924	25	70	79	2.2
1925	27	64	92	2.1
1926	30	55	81	2.1
1927	32	54	86	1.9
1928	29	55	89	1.8
1929	34	51	95	1.8
1930	33	55	90	1.9
1931	34	50	103	1.8
1932	30	57	117	1.7
1933	30	61	104	1.8
1934	34	48	100	1.8
1935	34	54	96	1.7
1936	32	53	93	1.7
1937	29	59	95	1.7
1938	31	53	100	1.6
1939	32	56	106	1.7
1940**	31	53	98	1.7
1914-18	30	57	105	2.3
1919-23	30	58	111	2.3
1924-28	29	60	85	2.0
1929-33	32	55	102	1.8
1934-38	32	53	97	1.7
25 Years	31	57	100	2.0

\*Sources of Data: Twenty-five Years of Farm Cost Accounts. By P. S. Williamson. Cornell Extension Bulletin 439, and subsequent reports of results of cost accounts on New York farms.

\*\*Preliminary.



## ESTIMATED COST OF PRODUCING MILK, YEAR OF 1941-42

E. G. Misner

The averages of 25 studies from 1914-1940 made by the survey method, shown in table 8, per 100 pounds of milk produced were: grain, 30 pounds; hay and other dry forage, 70 pounds; silage and other succulent feed, 111 pounds; labor 2.5 hours.

Some of the items of other costs are not available for some of the studies. The averages of these for 17 studies were, per 100 pounds of milk produced: pasture, 13 cents; bedding, 2 cents; use of buildings, 10 cents; use of equipment, 3 cents; depreciation on the cows, 9 cents; interest on the cows, 9 cents; horse labor, 3 cents; bull service, 5 cents; milk hauling, 16 cents; miscellaneous, 6 cents. For these same studies, the credit for calves was 6 cents and for manure and miscellaneous, 21 cents.

The estimated cost of producing milk for the year 1941-42, delivered to the country plant, on the basis of the above quantities of feed excluding pasture and labor per 100 pounds of milk at prices of \$40 per ton for grain, \$12.50 a ton for hay, and \$5.00 a ton for silage and 35 cents an hour for labor, and assuming the other costs and credits for manure, calves and miscellaneous are the same as the average for 17 studies, is given in table 10.

On the basis of the above computations, the yearly average cost of producing 100 pounds of average test milk would be \$2.69 for 1941-42. The cost of production in the winter is higher than the yearly average. On four studies it was found to be 117 per cent of the yearly cost for the 7 winter months. On this basis, the cost of production would be \$3.15 for the winter period. The cost of production may be expected to vary from this to the extent that the quantities, the prices, and the other costs vary from those indicated in the table.

TABLE 10. ESTIMATED COST OF PRODUCING MILK  
OF 3.5-3.6 PER CENT FAT, YEAR OF 1941-42  
DELIVERED TO COUNTRY PLANT, BASED ON FARM SURVEY DATA, NEW YORK STATE

	Amounts per 100 pounds of milk <sup>1/</sup>	Prices	Cost per 100 pounds of milk
Grain <sup>2/</sup>	30 lbs.	\$40 a ton, 2.0¢ lb.	\$0.60
Hay <sup>3/</sup>	70 lbs.	\$12.50 " , 0.625¢ lb.	0.44
Silage <sup>4/</sup>	110 lbs.	\$5.00 " , 0.25¢ lb.	0.28
Labor <sup>5/</sup>	2.5 hrs.	35¢ hr.	0.88
Pasture <sup>6/</sup>			0.13
Bedding			0.02
Depreciation on cows			0.09
Interest on cows			0.09
Milk hauling			0.16
Building use			0.10
Equipment use			0.03
Bull service			0.05
Horse labor			0.03
Miscellaneous			0.06
Total			\$2.96
Manure, calves and miscellaneous			0.27
Net cost of milk produced			\$2.69
Approximate average cost for 7 winter months <sup>7/</sup>			\$3.15

When the above quantities of feed and labor are used and other costs remain the same, a change of \$1.00 a ton in the price of grain would change the yearly cost of milk 1.5 cents a hundredweight.

A change of 5 cents in the labor rate would change the yearly cost of milk 12.5 cents a hundredweight.

A change of \$1.00 a ton in the value of silage would change the yearly cost of milk 5.5 cents a hundredweight.

A change of \$1.00 a ton in the value of hay would change the yearly cost of milk 3.5 cents a hundred pounds.

<sup>1/</sup> Averages of 23 Cornell surveys, 1914-1939, except for labor which was for 25 studies.

<sup>2/</sup> Estimated retail price less sacks for 20 per cent dairy feed on September 24, 1941

<sup>3/</sup> August 1941, price received by farmers for loose hay in New York. State Agricultural Statistician's report.

<sup>4/</sup> Estimated cost of producing silage.

<sup>5/</sup> Wages per month to hired help without board, July 1, 1941 were \$61.75. Estimated value of privileges \$25, estimated hours worked 250 per month = 35 cents per hour.

<sup>6/</sup> Other costs and credits except milk are averages for 1914-1936, 17 Cornell Surveys published in Cornell AES bulletins.

<sup>7/</sup> Seasonal costs for 4 Cornell surveys averaged 117 per cent of the yearly cost for the 7 winter months and 76 per cent for the 5 summer months.

## COST OF PRODUCING MILK IN VERMONT

J. A. Hitchcock

Amounts and values of items entering into the cost of producing milk as determined by farm management surveys in Vermont appear in table 11. These studies cover several different areas and include data from some 1,155 farms. The amounts of feed, especially of grain, per 100 pounds of milk appear to have been quite stable. There was a slow but appreciable decrease in the amount of labor per hundredweight over the 16 year period the records cover.

Though the amounts of feed and labor used in the production of 100 pounds of milk did not differ widely from year to year and from area to area, their prices did, and principally because of price variation the average total cost of feed (excluding pasture) and labor ranged from \$1.24 to \$2.54 per hundredweight. In rather sharp contrast with this the sum of all other items -- housing, interest, taxes, pasture, milk hauling, etc. -- was almost the same in all cases, varying only from \$0.60 to \$0.68 per hundredweight.

The stable nature of feeding practices and of the cost of items other than feed and labor makes it possible to estimate current production cost per hundredweight with a fair degree of reliability by applying current prices to quantities of feed and labor as determined by surveys, and adding a suitable charge for other costs. This has been done in table 12. The quantities used are drawn from the Champlain Valley study of 1933, the most recent survey available and one covering an area which lies in the New York milkshed. The grain price is the average for a 20 per cent ready mixed ration as reported by a group of Vermont retailers; the hay price is that reported for Vermont by the United States Department of Agriculture; and the wage rate is based on data from the same source. Miscellaneous costs and credits are assumed to be the same as were found in the 1932-33 survey.

The amount of grain per hundredweight of milk was considerably lower and the amounts of hay and silage appreciably larger than those shown for New York and Pennsylvania dairymen elsewhere in this report. Apparently Vermont farmers have been accustomed to depend less on grain and more on roughage as a source of nutrients than have farmers of the other two states. It is interesting to note, however, that differences between states in feeding practices, in feed prices, and in milk yields largely offset each other, and that the computed net cost for Vermont, \$2.62 per hundredweight, is within a few cents of comparable figures for New York and Pennsylvania.

TABLE 11.

## Vermont Agricultural Experiment Station

## Studies of the Cost of Production of Milk

	Boston milkshed 1916-17		Randolph- Royalton 1922-23		Enosburg 1922-23		Charlotte, Ferrisburg 1926-27		Champlain Valley 1932-33	
	Actual charges and net cost									
	Amount	Value	Amount	Value	Amount	Value	Amount	Value	Amount	Value
Grain	23#	\$0.48	29#	\$0.63	24#	\$0.50	23#	\$0.49	22#	\$0.25
Dry forage	68#	0.40	90#	0.72	103#	0.92	98#	0.51	94#	0.33
Succu- lents	110#	0.24	170#	0.48	71#	0.24	100#	0.25	116#	0.18
Labor	3.0 hrs.	0.65	3.1 hrs.	0.71	2.8 hrs.	0.64	2.4 hrs.	0.72	2.6 hrs.	0.48
Total		\$1.77		\$2.54		\$2.30		\$1.97		\$1.24
Other items		0.67		0.60		0.61		0.68		0.62
Total cost		\$2.44		\$3.14		\$2.91		\$2.65		\$1.86
Credits		\$0.46		\$0.50		\$0.45		\$0.34		\$0.22
Net cost		\$1.98		\$2.64		\$2.46		\$2.31		\$1.64
Other costs less credits		\$0.21		\$0.10		\$0.16		\$0.34		\$0.39
Grain, roughage and labor in percent of net cost		89		96		93		85		76
Number of farms		212		186		114		195		448

## Prices at Which Items Were Charged

	Boston milkshed 1916-17	Randolph- Royalton 1922-23	Enosburg 1922-23	Charlotte, Ferrisburg 1926-27	Champlain Valley 1932-33
	Unit prices				
Grain, per cwt.	\$2.06	\$2.20	\$2.10	\$2.20	\$1.15
Dry forage, per cwt.	0.60	0.80	0.90	0.50	0.35
Succulents, per cwt.	0.22	0.28	0.34	0.25	0.15
Pasture per cow day*	0.04	0.04	0.04	0.06	0.04
Labor per hour	0.22	0.23	0.23	0.30	0.19

\*Estimate 160 days pasturage.

TABLE 12.

Costs of producing 100 pounds of milk  
Champlain Valley, Vermont, 1932-33

	<u>Year</u>		<u>Winter</u>		<u>Pasture</u>	
	<u>Amount</u>	<u>Value</u>	<u>Amount</u>	<u>Value</u>	<u>Amount</u>	<u>Value</u>
Concentrates	22 lbs.	\$0.25	39 lbs.	\$0.44	6 lbs.	\$0.07
Dry forage	94 lbs.	0.33	181 lbs.	0.64	6 lbs.	0.02
Succulents	116 lbs.	0.18	200 lbs.	0.31	32 lbs.	0.05
Pasture		0.12		-		0.23
All feed		\$0.88		\$1.39		\$0.37
Labor	2.6 hrs.	0.48	3.2 hrs.	0.61	1.9 hrs.	0.35
Other costs		0.50		0.55		0.45
Total cost		\$1.86		\$2.55		\$1.17
Credits		0.22		0.36		0.08
Net cost		\$1.64		\$2.19		\$1.09
Test of milk, percent		3.74		3.74		3.75
Milk per cow		5350 lbs.		2690 lbs.		2660 lbs.
Length of season				200 days		165 days

Estimated average annual cost per hundredweight at August 1941 prices

	<u>Amount</u>	<u>Price</u>	<u>Value</u>
Grain	22 lbs.	\$42.00 per ton	\$0.46
Dry forage	94 lbs.	12.00 per ton	0.56
Succulents	116 lbs.	5.00 per ton	0.29
Pasture			0.12
Labor	2.6 hrs.	0.35	0.91
Feed and labor			\$2.34
Bedding			\$0.01
Bull service			0.03
Housing and equipment costs			0.13
Interest and taxes on cows			0.08
Milk hauling			0.14
Depreciation			0.04
Miscellaneous			0.07
All other			0.50
Total cost			\$2.84
Credits			
Manure			\$0.19
Calf			0.03
Total credits			\$0.22
Net cost			\$2.62

## MILK COST STUDIES IN PENNSYLVANIA

F. F. Lininger

The cost of producing 100 pounds of milk on 74 farms in Pennsylvania in 1940 was \$2.32. In 1939, the average cost was \$2.34, and in 1938, it was \$2.13. These were the findings of W. L. Barr, Research Economist of the Pennsylvania Agricultural Experiment Station, who studied milk production costs on 53 to 79 farms. Over the 3-year period, costs averaged \$2.26 per 100 pounds.

Production costs have been increasing during 1941. Based on the Pennsylvania studies together with other farm management data, the estimated cost of producing milk at current prices is \$2.59 on a yearly basis.

A change of \$1.00 per ton in the cost of feeds would change the cost of producing 100 pounds of milk as follows:

Grain	1.6 cents
Dry forage	2.95 cents
Succulents	4.1 cents

A change of 5 cents per hour in the labor rate would change the cost of producing 100 pounds of milk 10.5 cents.

FEL  
A. E. 365  
TABLE 13A

COST OF PRODUCING MILK IN PENNSYLVANIA\*  
1938-1940

	Cost per hundredweight of milk at market			
	1938	1939	1940	3 yr. ave.
<u>Costs</u>				
Grain	\$0.47	\$0.43	\$0.49	\$0.46
Dry forage	.26	.28	.32	.29
Silage	.17	.20	.17	.18
Pasture	.13	.15	.14	.14
Total	<u>\$1.03</u>	<u>\$1.06</u>	<u>\$1.12</u>	<u>\$1.07</u>
Labor	.62	.64	.62	.63
<u>Other Costs</u>				
Bedding	.05	.05	.05	.05
Building costs	.12	.12	.11	.12
Equipment costs	.04	.04	.04	.04
Interest @ 5%	.09	.08	.07	.08
Breeding cost	.05	.06	.07	.06
Depreciation - Appreciation	.01	.10	.11	.07
Miscellaneous	.06	.08	.06	.07
Total	<u>.42</u>	<u>.53</u>	<u>.51</u>	<u>.49</u>
Milk Hauling and Cooperative Dues	.24	.28	.25	.25
Gross Cost	\$2.31	\$2.51	\$2.50	\$2.44
<u>Credits</u>				
Calves	.06	.05	.07	.06
Manure	.12	.11	.10	.11
Other	**	.01	.01	.01
Total	<u>.18</u>	<u>.17</u>	<u>.18</u>	<u>.18</u>
Net Cost	\$2.13	\$2.34	\$2.32	\$2.26

\*Unpublished data - W. L. Barr, Dept. of Agricultural Economics, The Pennsylvania State College. Mimeographed reports on Costs of Milk Production in 1938, 1939, and 1940 are published as Technical papers 923, 987, and 1035 of the Pennsylvania Agricultural Experiment Station.

\*\*Less than one cent.

FFL

A. E. 365  
TABLE 14.

ESTIMATED COST OF PRODUCING 100 POUNDS OF MILK  
BASED ON PENNSYLVANIA STUDIES AND CURRENT PRICES\*

	Quantity per 100 pounds of milk	Price	Value
Grain (pounds)	32	\$40 per ton	\$0.64
Dry forage (pounds)	59	\$10 per ton	.30
Succulents (pounds)	82	\$5 per ton	.21
Pasture			.14
Labor (hours)	2.1	35 cents per hour	.74
Other costs			<u>.74</u>
			\$2.77
	Less Credits		
	Calves	.06	
	Manure	.11	
	Other	<u>.01</u>	<u>.18</u>
Net cost per 100 pounds milk (3.9 fat)			\$2.59

A change of \$1.00 per ton in the cost of feeds would change the cost of producing 100 pounds of milk as follows:

Grain	1.6 cents
Dry forage	2.95 "
Succulents	4.1 "

A change of 5 cents per hour in the labor rate would change the cost of producing 100 pounds of milk 10.5 cents.

\*W. L. Barr, Technical papers 923, 987, and 1035 of the Pennsylvania Agricultural Experiment Station.