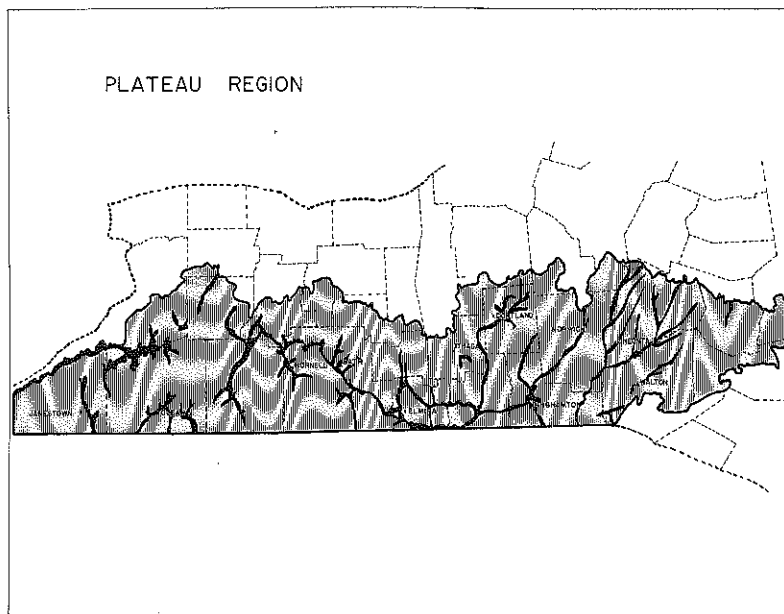


Letters to Dairymen

TO REPORT AN ECONOMIC STUDY
OF COMMERCIAL DAIRY FARMS LOCATED IN THE
PLATEAU REGION OF NEW YORK
1957-58

By L. C. Cunningham



Plateau region

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INTRODUCTION

In the summer of 1958, financial records were obtained for 1,075 commercial dairy farms - a 10 percent random sample of such farms located in the Plateau region of New York. The records covered the 12-month period ended April 30, 1958. Following completion of the field work, summarization and analysis of the records were begun. As the work progressed, letters were prepared to report preliminary results of the study. This report consists of copies of these letters. A final report of the study will be published in bulletin form.

There were 12 letters in all, the first one in December 1958 and the last in June 1960. They were mailed to those cooperating farmers in the survey who requested them and to county agricultural agents, high school teachers of Agriculture, college associates and other interested persons.

Even in the relatively stable dairy industry many changes are being made, particularly with respect to size of operation and amount of mechanization. With this series of letters it was possible to make the results of the study available much sooner than the usual printed report method. A secondary but worthwhile advantage of the procedure was the stimulation of ideas about analyzing the data during the progress of the study.

The Plateau region is one of 5 major dairy regions in New York that have been outlined and described. Economic studies similar to this one for the Plateau region have been made in recent years for the Central Plain and North Country regions. Study of the Oneida-Mohawk region was started in the summer of 1960.

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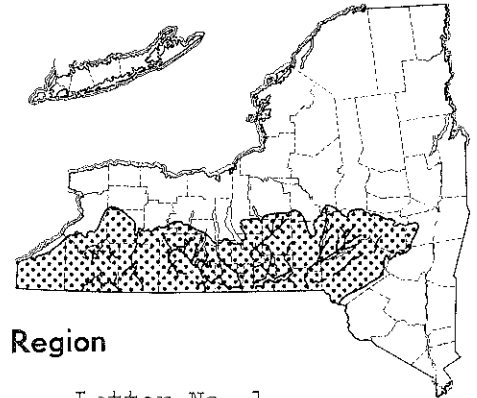
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Dairy Farming



in the



Plateau Region

December 29, 1958

Letter No. 1

To Farmers Visited on
Farm Management Survey:

Your card has been received and we are glad to place your name on the list to receive this series of letters. Progress is being made in summarizing the farm records and we plan to report results of the study as we go along. In this letter we will describe the region more fully and explain the grouping of the farms.

The Region

The Plateau region embraces most of the great expanse of upland area that extends across southern New York. A marked feature of the region is the network of valleys which cross it, mainly in a north-and-south direction. The slopes of the valley walls are usually steep. The tops of the plateau are fairly level to rugged. The soils were formed mainly from local shales and sandstones.

Two broad groups of soils based on their origins are found. Glacial till is ground-up rock mixtures of these shales and sandstones deposited by the glaciers. This mantle of soils of varying textures is found mostly on the hills. By water action these mixtures were sorted and deposited as outwash and other water-laid soils in the valleys.

Groups of Farms

Based on the soils, elevation and topography of the cropland, each farm was placed in one of the following groups:

1. Hill. Farms with all or practically all (90 per cent or more) of the cropland on glacial till soils. Most hill farms are at higher elevations than valley farms, and some have rough and steep topography.
2. Valley. Farms with all or practically all (90 per cent or more) of the cropland on outwash and other water-laid soils. The width and topography of the valley floors vary greatly.
3. Hill-Valley. Farms with both kinds of soils, but more glacial till (50 to 90 per cent) than of water-laid soils.
4. Valley-Hill. Farms with both kinds of soils but more water-laid soils (50 to 90 per cent) than glacial till.

Farms with equal proportions of till and water-laid soils were grouped as hill-valley or valley-hill depending on the location of the farmstead and economic land class. The percentages in these definitions are more precise than is our knowledge of the farms, but they serve as useful limits. If you wonder what we called your farm, drop us a line and we will be glad to tell you.

Presenting the results of the study in these groups of farms will make it possible for you to compare your farming operations with the averages of farms run under similar conditions.

The Plateau region contains nearly 40 per cent of all the dairy farms in the State. Since not all of the farms in the region can be studied, a sampling of them was resorted to. The first step in the sampling procedure was to locate on detailed maps all of the dairy farms in the region. Next, the roads were divided into pieces or segments each containing six dairy farms. A 10 per cent random sample of these road segments was drawn. Then personal visits were made to all of the places in each of these sample segments - 290 segments in all. Complete records were obtained for the full-time commercial dairy farms and brief records were taken for the other places. A summary of these counts shows:

Commercial dairy farms records obtained	1,088
Commercial dairy farms records not obtained	152
Commercial farms of other types	180
Total commercial farms	1,420
Part-time farms	723
Total farms	2,143
Rural residences	3,500
Total places	5,643

A commercial farm was defined as one with at least 100 days of productive work (6 or more cows) and no more than 25 per cent of the gross income from off-farm sources.

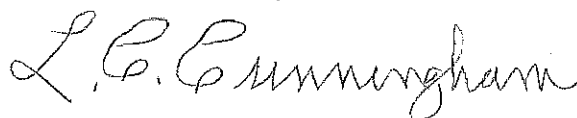
In the sample there were 2,143 farms, of which one in 3 was a part-time farm. Rural residences were much more numerous than farms. All of these counts were made outside of the villages, towns, and suburban areas. Here is the distribution of the 1,088 commercial dairy farms for which records were obtained:

<u>Group</u>	<u>Number of farms</u>	<u>Per cent of farms</u>
Hill	674	62
Hill-Valley	163	15
Valley	150	14
Valley-Hill	101	9
Total	1,088	100

About 60 per cent of the farms are hill farms and an additional 15 per cent of them are hill-valley farms. The remaining 23 per cent of the farms are valley or valley-hill operations.

With this information about the region and the farm groupings, we are ready to begin the description of the farms in our next letter.

Yours truly,



L. C. Cunningham
Extension Economist

COOPERATIVE EXTENSION WORK IN AGRICULTURE
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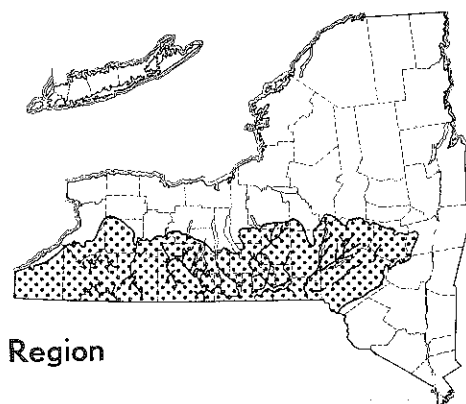
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Dairy Farming



in the



Plateau Region

March 18, 1959

Letter No. 2

To Farmers Visited on
Farm Management Survey:

The use of land and the kinds and amounts of crops produced in 1957 are described in this second letter of the series. The 1957 crop season was about normal, according to the New York Crop Reporting Service. Weather conditions in 1957 were much more favorable for hay harvest than in 1958, when frequent rains delayed the harvest.

Acres per farm. The average size of the 1,075 commercial dairy farms in the study was 244 acres per farm, of which 85 acres were in crops and 93 acres in pasture:

<u>Land use</u>	<u>Acres per farm</u>
Crops	85
Pasture	93
Woods	56
Farmstead and other	10
Total	244

In this study, a farm includes all of the land operated as one unit.

In addition to the individual farm groupings, the region was divided into west and east sections, with the west boundary lines of Tompkins and Tioga Counties as the division between the two sections.

Variation in acres of cropland. In acreage of cropland, the farms were a little larger in the west section than in the east section of the region. In both sections, the valley farms

were the smallest, whereas the valley-hill farms were the largest. The valley-hill farms in the west section, with an average of 109 acres per farm, were the largest of all the groups:

<u>Group of farms</u>	<u>Crop acres per farm</u>	
	<u>West</u>	<u>East</u>
Hill	90	81
Hill-Valley	85	80
Valley-Hill	109	93
Valley	78	75

Over the years, most farms located in the valleys have undoubtedly been enlarged. Those which added valley land we call valley farms. Those which added hill land we call valley-hill farms. By 1957, these valley-hill farms were about one-fourth to one-third larger in crop acreage than the neighboring valley farms.

The amount of cropland per farm varied widely in all groups of farms in both the west and east sections of the region. The most common size was in the range of 40 to 79 acres. In both sections very small farms (less than 40 acres) were more common in the valley groups than in the other groups. Very large farms (160 or more acres) were more common in the valley-hill groups.

Hay. In acreage, hay was, of course, the most important crop in the region. The regular hay meadows accounted for 62 per cent of the total cropland, and averaged 53 acres per farm. The pro-

portion of the cropland in hay was highest on the hill farms, and in all groups of farms was higher in the east section than in the west section. Nearly 20 per cent of the hay acreage was "new seeding", or first-year hay, which suggests that the meadows generally were left down about 5 years. Reseeding was somewhat more frequent on the valley farms than on the hill farms. Second cuttings were harvested from 24 per cent of the first-year meadows and from 8 per cent of the older meadows.

The regular hay meadows were supplemented by about one-half acre per farm, on the average, of grain crops cut for hay, mostly oats. Eight per cent of the farms cut such hay. The practice was more common in the east section than in the west. Also, in addition to the regular meadows, about 2.5 acres per farm of hay was bought standing or cut on shares. This practice was found on 9 per cent of the farms.

Hay yields on the regular meadows averaged 1.9 tons per acre in the region as a whole. Average yields were somewhat higher on the valley and valley-hill farms than in the other groups of farms. Yields were lowest (1.6 tons) on the hill farms in the east section. The total tonnage of all hays harvested amounted to 102 tons per farm.

Grass silage. Because of the importance of early harvest of the hay crop, the practice of putting up grass silage is of particular interest. For the region as a whole, 25 per cent of the farms put up some grass silage. About 5 per cent of the total hay acreage was so harvested. Those who put up grass silage harvested 13 acres per farm. The average yield was 6.3 tons per acre. A little over one-half of the acreage harvested for grass silage was from first-year meadows.

Grass silage was of similar importance in the different groups of farms in the region.

Corn for silage. This crop was grown on 11 per cent of the cropland. Most of the farms (93 per cent) had corn for silage, but it was of less importance on the hill farms in the east section of the region. Yields per acre averaged higher in the east section than in the west, and were somewhat lower on the hill farms in both sections than in the other groups of farms. For the whole region the average yield of corn for silage was 9.7 tons per acre.

Other crops for silage. Oats, millet and sorghums were harvested as silage on some farms. These crops were much more common in the east section than in the west. They were of particular importance on the hill farms in the east section, where 21 per cent of the farms raised either one or more of these crops for silage.

Grains. The principal grain crop was oats, which occupied 15 per cent of the cropland and was raised on 75 per cent of the farms. The crop was much more important in the west section than in the east, although average yields were similar in both sections. The regional average was 54 bushels per acre.

Small acreages of corn for grain were raised on 18 per cent of the farms. There was more in the west than in the east, and more on the valley farms than on the hill farms. One-fourth of the farms in the west section raised wheat, but only 4 per cent in the east. Barley, buckwheat and rye were of minor importance, except on a few farms.

The grains along with the hay, grass silage, and corn silage accounted for 96 per cent of the total crop acreage.

Other crops. Dry beans, potatoes and canning crops were raised on only a few farms in the study. By definition, only farms with 50 per cent or more of the gross income from dairy were included.

Summary. The cropland on the dairy farms in the region was used largely for feed production, mostly roughage. There were some interfarm sales of hay, but the region is about self-sufficient on roughage. In addition to the 102 tons of hay harvested per farm, there were 20 tons of grass silage and 95 tons of corn and other grain crop silages produced per farm. In terms of hay equivalent (3 tons of silage equal 1 ton of hay equivalent) the total amount of these crops harvested was equal to 5.0 tons per milk cow in the herd. This figure includes the roughage for the accompanying stock. Not all of this amount was consumed by the animals, however, because of storage losses and waste.

The average amount of roughage harvested per milk cow in this region is larger than that in the North Country region, but lower than that in the Central Plain region of the State:

<u>Region</u>	<u>Crop year</u>	<u>Hay equiv. per cow</u>
Plateau	1957	5.0 tons
North Country	1955	4.6 tons
Central Plain	1953	5.8 tons

All 3 crop seasons were similar in growing conditions.

There was a marked difference in the amounts of roughage harvested per cow in various parts of the Plateau region. In general, the average amount was larger in the west section than in the east. Interestingly enough, the hill farms in the west section had the largest average amount per cow (5.4 tons),

whereas the hill farms in the east section had the smallest average amount per cow (4.5 tons):

<u>Groups of farms</u>	<u>Tons of H.E. per cow</u>	
	<u>West</u>	<u>East</u>
Hill	5.4	4.5
Hill-Valley	5.2	4.7
Valley-Hill	5.1	5.2
Valley	5.2	5.0

You can calculate this important figure for your own farm by filling in the following blanks:

<u>Items</u>	<u>Tons harvested</u>	
	<u>actual</u>	<u>hay equiv.</u>
Hay	_____ ÷1	_____
Grass silage	_____ ÷3	_____
Corn silage	_____ ÷3	_____
Total	x x	_____
Number of milk cows		_____
Average per cow		_____

Compare your figure with the average of the appropriate group above.

Unfortunately, no direct measure of the quality of these roughages is available. The approximate dates of the hay harvest on each farm were enumerated, but are not yet tabulated. They will be reported in a later letter. The cattle and milk production will be described in our next letter.

Yours truly,



L. C. Cunningham
Extension Economist

CROP PRODUCTION, BY FARM GROUPS
1,075 dairy farms, Plateau Region, New York, 1957-58

Items	Region	WEST				EAST			
		Hill	Hill- Valley	Valley- Hill	Valley	Hill	Hill- Valley	Valley- Hill	Valley
Total acres per farm	244	231	240	297	210	247	269	282	233
Crop acres per farm	85	90	85	109	78	81	80	93	75
Hay, regular									
% of cropland	62	57	56	50	50	71	66	63	65
Acres per farm having	53	52	48	55	40	58	53	59	49
% first year	19	23	23	25	26	13	15	16	19
Tons per acre	1.9	1.9	2.0	2.1	2.2	1.6	1.9	2.1	2.0
Hay, grain crop									
% of farms having	8	3	5	0	1	13	11	11	17
Grass silage									
% of farms having	25	25	27	28	19	23	34	20	26
% of hayland	6	5	6	7	10	5	8	4	6
Acres per farm having	13	11	12	15	20	13	14	12	13
Tons per acre	6.3	6.6	7.1	7.2	5.7	6.0	5.6	6.8	6.2
Corn for silage									
% of farms having	93	80	86	91	85	68	79	85	79
% of cropland	11	11	12	13	14	9	11	14	12
Acres per farm having	12	12	12	15	13	10	11	15	12
Tons per acre	9.7	8.4	9.2	9.9	9.8	9.6	11.4	11.8	11.3
Other grain-crop silage									
% of farms having	11	4	3	5	4	21	17	14	14
Oats									
% of farms having	75	91	94	98	81	57	60	77	61
% of cropland	15	19	21	20	17	10	11	14	10
Acres per farm having	17	18	19	22	16	14	15	17	13
Bushels per acre	54	53	52	55	59	54	57	58	58
Corn for grain									
% of farms having	18	17	22	33	35	11	15	32	21
Wheat									
% of farms having	15	23	28	37	30	5	3	3	6
Hay equivalent									
Tons per farm	140	135	135	172	134	132	149	183	148
Tons per cow	5.0	5.4	5.2	5.1	5.2	4.5	4.7	5.2	5.0

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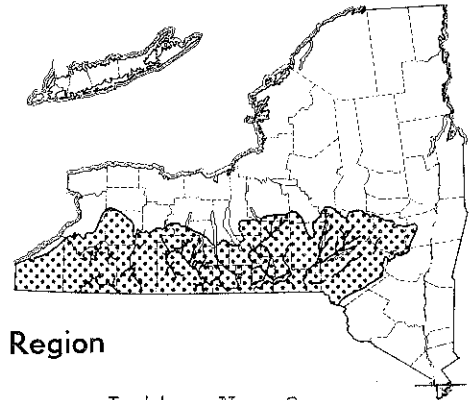
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Dairy Farming



in the



Plateau Region

May 5, 1959

Letter No. 3

To Farmers Visited on
Farm Management Survey:

The dairy herds and milk production on the 1,075 farms in the farm management study are described in this third letter of the series.

Size of herd. In this discussion, keep in mind that farms with fewer than 6 cows were not included in the study. Very few farms are that small anyway. Also, the study is based on essentially full-time farmers (not more than 25 percent of the gross income from non-farm sources). This limit excluded many farms whose operators had other interests.

Farmer experience with respect to size of herd covers a wide range in present-day dairying. Few herds of less than 10 cows remain. Twenty-six percent of the farms had herds from 10 to 20 cows and one-third had 20 to 30 cows:

<u>Cows per farm</u>	<u>Number of farms</u>	<u>Percent of farms</u>
Less than 10	32	3
10 to 20	281	26
20 to 30	358	33
30 to 40	231	21
40 to 50	95	9
50 to 100	72	7
100 or more	6	1
Total	1,075	100

Herds of 30 to 40 cows were found on 21 percent of the farms, and herds of 50 or more cows on 8 percent. Six farms of the entire 1,075 had 100 or more cows. The largest one of these had 225 cows; two others had 200 cows each. The average number of cows on all farms in the region was 28 per farm.

The herds averaged largest on the valley-hill farms in both the west and east sections of the region. All 4 groups of farms in the east section had larger herds than those in the west:

<u>Groups of farms</u>	<u>Cows per farm</u>	
	<u>West</u>	<u>East</u>
Hill	25	29
Hill-Valley	26	31
Valley-Hill	34	35
Valley	26	30

Cows and cropland. The average amount of cropland operated per farm, as described in the previous letter, was 85 acres. With 28 cows per farm, this meant 3.0 crop acres per cow for the region as a whole. The farms were more heavily stocked with cattle in the east section than in the west (2.7 acres per cow versus 3.4). The hill farms in both sections, especially in the west, had somewhat more cropland per cow than did the other groups. Also, the valley-

hill farms had more cropland per cow than the valley farms, despite the larger herds on the valley-hill farms:

Groups of farms	Crop acres per cow	
	West	East
Hill	3.6	2.8
Hill-Valley	3.3	2.6
Valley-Hill	3.2	2.7
Valley	3.0	2.5

Herd replacements. Three-fourths of the replacements added to the herds were raised and one-fourth were bought. There were 15 heifers of all ages per farm, or 53 per 100 cows on hand.

In the west section, the raising of some surplus cattle for sale was shown by the fact that there were 59 heifers per 100 cows in this area compared with 49 in the east section.

During the year, 5.7 cows were sold and 0.6 butchered or lost by death to make a total of 6.3 head per farm removed from the herds. This figure compared with the 27.8 cows on hand at the beginning of the year gives a culling rate of 23 percent.

Milk production. Total milk sales averaged 216,000 pounds per farm, or 7,700 pounds per cow. The amount of milk sold per cow varied widely from farm to farm. On 91 farms, or 8 percent of all farms, milk sales were less than 5,000 pounds per cow. On 123 other farms, or 12 percent, production was within the range of 5,000 to 6,000 pounds per cow. Intermingled with these relatively low-producing herds were other herds with high production. Twelve percent of the farms had milk sales of 10,000 pounds or more per cow. Three percent had 10,000 to 11,000 pounds per cow and 1 percent, or 1 farm in 100, sold 12,000 pounds or more per cow:

<u>Pounds of milk per cow</u>	<u>Number of farms</u>	<u>Percent of farms</u>
Less than 5,000	91	8
5,000 to 6,000	123	12
6,000 to 7,000	194	18
7,000 to 8,000	225	21
8,000 to 9,000	183	17
9,000 to 10,000	131	12
10,000 to 11,000	86	8
11,000 to 12,000	30	3
12,000 or more	12	1
Total	1,075	100

Milk production per cow averaged about 300 pounds, or 4 percent, higher in the east section of the region than in the west. In the west section, there was little difference among the groups of farms, except that production was a little higher on the valley farms than in the other groups. In the east section, production per cow on the hill farms was about the same as in the west section, but lower than in the other east groups. The valley farms in the east section, with 8,450 pounds of milk sold per cow, had the highest average production of all the groups:

Groups of farms	Pounds of milk sold per cow	
	West	East
Hill	7,490	7,500
Hill-Valley	7,430	8,170
Valley-Hill	7,520	8,340
Valley	7,790	8,450

The average milk production per cow in the Plateau region was above that for the North Country region and for the State as a whole, but was below the rate for the Central Plain region:

Region	Crop year	Lbs. milk per cow	
		actual	est. 1957
Plateau	1957	7,700	7,700
North Country	1955	6,550	6,840
Central Plain	1953	8,050	8,630
New York State	1957	7,150	7,150

Milk per cow and hay equivalent. The importance of roughage in producing milk is shown by the amounts of hay equivalent per cow for the groups of farms with different rates of milk per cow. On the farms with relatively low rates of milk production only 4.7 tons of roughage was harvested per cow (see chart). But on the farms with 10,000 to 11,000 pounds per cow, the amount averaged 5.5 tons. The amount in the highest production group was even larger.

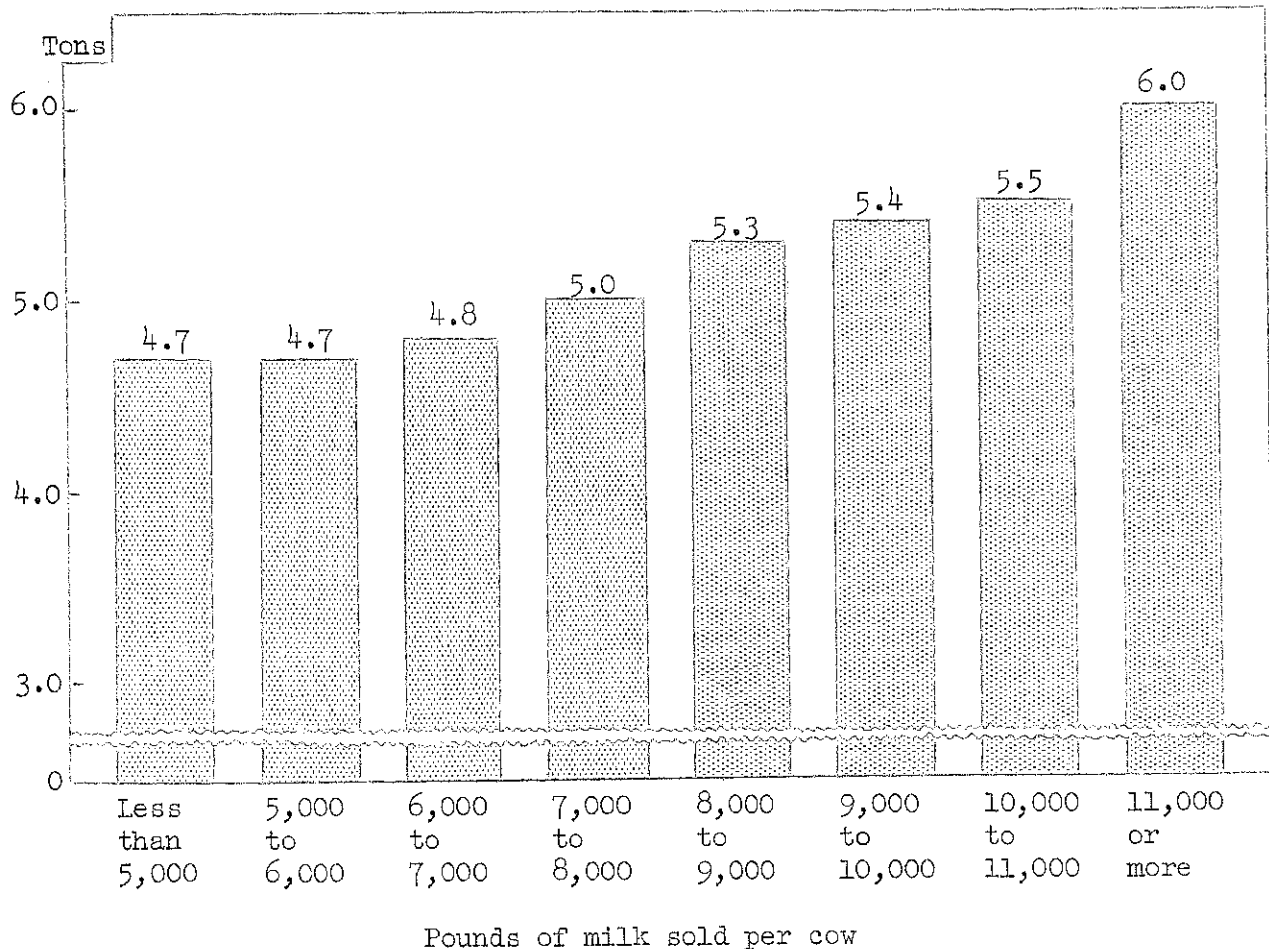
It should be kept in mind that these hay equivalent tonnages are the amounts harvested per milk cow, not the amounts fed. Also, these amounts are for the cows and the accompanying other stock on the farms. Differences in quality of roughage and in pasture conditions are not known.

You are urged to calculate the amount of milk sold per cow from your farm during the year and, together with the hay equivalent per cow calculated as suggested in letter number 2, indicate your own farm situation on the chart.

Six to 7 tons of hay equivalent per cow of the best possible quality to sustain a high level of milk production per cow is one of 2 major keys for success in dairy farming. The other is a large outturn of milk per man. This subject and related facts will be described in our next letter.

Yours truly,

L. C. Cunningham
L. C. Cunningham
Extension Economist



DAIRY HERDS AND MILK PRODUCTION, BY FARM GROUPS
1,075 dairy farms, Plateau Region, New York, 1957-58

Items	Region	WEST				EAST			
		Hill	Hill- Valley	Valley- Hill	Valley	Hill	Hill- Valley	Valley- Hill	Valley
Cows per farm									
Average	28	25	26	34	26	29	31	35	30
Range-% of farms with:									
Fewer than 10 cows	3	4	3	0	1	1	5	2	6
10 to 19 cows	26	33	34	26	30	23	17	11	21
20 to 29 cows	33	35	34	30	35	32	36	32	31
30 to 39 cows	21	17	17	21	22	26	23	32	16
40 to 49 cows	9	5	4	9	8	12	13	12	12
50 to 99 cows	7	6	8	12	4	6	6	8	14
100 or more cows	1	0	0	2	0	0	0	3	0
Total	100	100	100	100	100	100	100	100	100
Crop acres per cow	3.0	3.6	3.3	3.2	3.0	2.8	2.6	2.7	2.5
Heifers of all ages									
Number per farm	15	15	16	19	15	14	15	17	15
Number per 100 cows	53	59	60	56	57	50	45	49	51
Percent of cows replaced	23	25	22	24	22	22	21	22	21
Pounds milk sold per cow									
Average	7700	7490	7430	7520	7790	7500	8170	8340	8450
Range-% of farms with:									
Less than 5,000 lbs.	8	11	13	9	10	8	1	11	4
5,000 to 5,999 lbs.	12	14	12	5	8	12	14	14	9
6,000 to 6,999 lbs.	18	16	21	25	20	20	13	18	17
7,000 to 7,999 lbs.	21	20	21	16	24	22	23	20	17
8,000 to 8,999 lbs.	17	17	14	21	19	16	15	22	20
9,000 to 9,999 lbs.	12	11	9	7	7	12	26	11	13
10,000 to 10,999 lbs.	8	7	6	12	4	8	6	3	14
11,000 to 11,999 lbs.	3	2	4	5	7	1	5	1	4
12,000 lbs. or more	1	2	0	0	1	1	0	0	2
Total	100	100	100	100	100	100	100	100	100
Percent milk sold Oct.-Mar.	47	44	46	49	46	47	48	49	49

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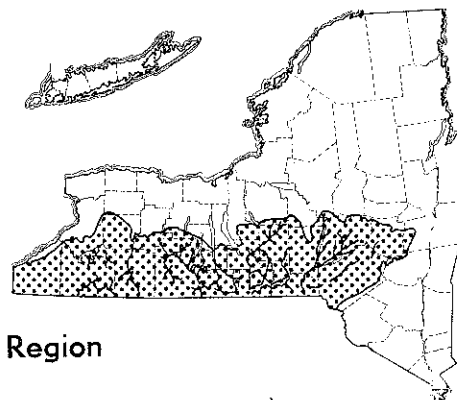
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Dairy Farming



in the



Plateau Region

Letter No. 4

To Farmers Visited on
Farm Management Survey:

June 9, 1959

Important characteristics of the labor force on the 1,075 commercial dairy farms included in the study are described in this letter number 4 of the series.

Operator labor. Since this study is based on full-time farmers there were 12 months of operator labor per farm. Seventy-five, or 7 percent, of the 1,075 farm operators had full-time partners. In most cases, these partners were sons, brothers or other relatives of the operators. The average age of all operators was 49 years.

Family labor. Farm work performed by members of the family was expressed in terms of months equivalent of man time. Such family labor other than operator and partner amounted to 3.3 months per farm and was found on 60 percent of all farms. It was included in the farm expenses at a wage allowance of \$150 per month.

Hired labor. Hired labor by the week or month with board amounted to 1.8 months per farm, and was reported on 22 percent of the farms. Hired labor without board amounted to 1.4 months per farm, and was found on only 12 percent of the farms. Day and hour labor was employed on about one-fourth of the farms, but only in a limited way - equivalent to 13 days or 0.5 month per farm.

Man equivalent. All farm labor amounted to about 20 months per farm, most of which was performed by the operator and members of his family:

<u>Kind of worker</u>	<u>Months per farm</u>
Operator	12.0
Partner	0.9
Family	3.3
Hired	3.7
Total	19.9

In this region as elsewhere in New York, the typical commercial dairy farm continues to be essentially a family operation.

The average man equivalent on the farms studied was 1.7 per farm (19.9 ÷ 12). The average man equivalent per farm was larger in the east section of the region than in the west:

<u>Group</u>	<u>Man equivalent per farm</u>
West section	
Hill farms	1.6
Valley farms	1.6
East section	
Hill farms	1.7
Valley farms	1.8

Variation in size of labor force.

Among the 1,075 farms, 143 were one-man operations. Man equivalents ranging from 1.1 to 2.0 were found on 720, or 67 percent, of the farms. Only 8 farms had a labor force of 4.1 or more:

<u>Man equivalent</u>	<u>Number of farms</u>	<u>Percent of farms</u>
1.0	143	13
1.1 to 2.0	720	67
2.1 to 3.0	182	17
3.1 to 4.0	22	2
4.1 or more	8	1
Total	1,075	100

Wage rates. Help hired by the week or month with board was paid cash wages, on the average, of \$113 per month. In addition, cash cost of board was included at \$30 per month as a farm expense. Cash wages of hired help not boarded averaged \$195 per month. Day or hour help not boarded received on the average \$8.81 per day.

Hired men's wage rates without board in this region were about the same as that reported for 1957-58 in the State as a whole. Wages with board were, however, somewhat lower:

<u>Place</u>	<u>Cash wages per month</u>	
	<u>with board</u>	<u>without board</u>
Plateau region	\$113	\$195
New York State	\$137	\$192

Variation in wage rates. A wide range in the ages and capabilities of the hired men on these farms is reflected in the wage rates paid to individuals. Of the 266 men hired by the week or month with board, 15 percent of them received less than \$50 a month and another 15 percent were paid \$50 to \$74 a month. Nearly two-thirds of such workers received wages

of less than \$125 per month. Only 10 percent of the men earned as much as \$200 a month.

Similarly, of the 163 workers hired by the week or month but not boarded, 7 percent of them earned less than \$100 a month. Seventeen percent had wages within the range of \$100 to \$149 a month. Much higher wages were paid to others. About 50 percent of the hired men received wages of \$200 or more per month, and of these 14 percent got \$250 or more.

Many farmers reported that they could not get fully capable hired help. It is also true that the output of milk and other products on some farms was too low to justify fair wages to a good hired man.

<u>Wage rates per month</u>	<u>Percent of hired men</u>	
	<u>with board</u>	<u>without board</u>
Less than \$50	15	3
50 to 74	15	2
75 to 99	11	2
100 to 124	22	10
125 to 149	8	7
150 to 174	17	17
175 to 199	2	6
200 to 224	7	31
225 to 249	1	8
250 or more	2	14
Total	100	100

Labor expense per farm. For all farms, the total expense for hired help averaged \$1,157 per farm. In addition to the cash wages paid, this total includes the cash cost of board of hired help, payments for social security, compensation insurance and other items incidental to hired labor.

The wage allowance for family labor averaged \$491 per farm. The partner labor was not included as a farm expense, but was treated as sharing in the labor income of the operator.

Output per man. The average number of milk cows cared for per man was 17. Perhaps a better measure of labor use is the amount of milk sold per man, largely because it takes into account the kind of cows as well as the number kept per man. For all farms, 131,000 pounds of milk was sold per man.

On the hill farms in the west section of the region where there is somewhat more emphasis on feed crops and heifers, the amount of milk sold per man was lower than in the other groups of farms. The valley farms in the east section had the highest amount of milk per man:

<u>Group</u>	<u>Thousand lbs. of milk sold per man</u>
West section	
Hill farms	116
Valley farms	136
East section	
Hill farms	133
Valley farms	153

Variation in amount of milk per man. Much more milk was sold per man from some farms than others. Less than 50,000 pounds of milk per man was sold from 58 farms, or 5 percent of all farms. Although this quantity of milk is small, the proportion of farms is also small. But only 50,000 to 100,000 pounds of milk per man was sold from 298, or 28 percent, of all farms:

<u>Thous. lbs. of milk sold per man</u>	<u>Number of farms</u>	<u>Percent of farms</u>
Less than 50	58	5
50 to 99	298	28
100 to 149	365	34
150 to 199	221	20
200 to 249	83	8
250 to 299	33	3
300 or more	17	2
Total	1,075	100

Thus, one-third of the farms had an output of milk of less than 100,000 pounds per man. Such low productivity of labor places these farms at a tremendous competitive disadvantage.

Remarkably high labor efficiency was found on other farms. Thirteen percent of the farms sold 200,000 pounds or more of milk per man, and of these, two farms in a 100 sold 300,000 pounds or more.

Product units per man. Dairymen produce varying amounts of hay, silages, grains, heifers and other products on their farms. A more inclusive measure than the amount of milk per man can serve a useful purpose. Product units per man is such a measure. A product unit is defined as the equivalent of 7,000 pounds of milk - the annual production of an average dairy cow in the State. Other product unit equivalents are 22 tons of hay, 72 tons of corn silage, 535 bushels of oats, and 6.5 heifers on hand. Similar equivalents were calculated for other products.

For example, take a one-man farm with 20 cows and 13 heifers of all ages that sold 200,000 pounds of milk for the year. The crops consist of 100 tons of hay, 75 tons of corn silage and 550 bushels of oats. Obviously, 200,000 pounds of milk was sold per man. The total product units amounted to 37 (milk 28.6, heifers 2.0, hay 4.5, corn silage 1.0 and oats 1.0) per farm and per man.

The number of product units was calculated for each farm in the study. For all 1,075 farms, there were 44 product units per farm and 27 product units per man. Of these 27 product units, 19 consisted of milk and the remaining 8 of other products. Not only did the product units per man vary widely from farm to farm, but the proportions from milk and other products were far from uniform.

There was considerable difference in emphasis on milk between the hill farms in the west section and the valley farms in the east. The hill farms had per man 16.6 product units of milk and 9.5 product units of other things (figure 1). Milk made up only 64 percent of the total. In contrast, the valley farms in the east had 21.9 product units of milk, but only 7.4 of other per man. The percentage for milk was 75 percent of the total. In other words, the valley farms were more specialized in milk production than were the hill farms. By both measures, however, they had the highest labor efficiency.

If you have not already done so, why not figure the outturn from labor for your own farm? The relation of this factor in income will be described in a future letter. Our next letter will deal with the capital investment in the farms with special reference to power and machinery.

Yours truly,

L. C. Cunningham
Extension Economist

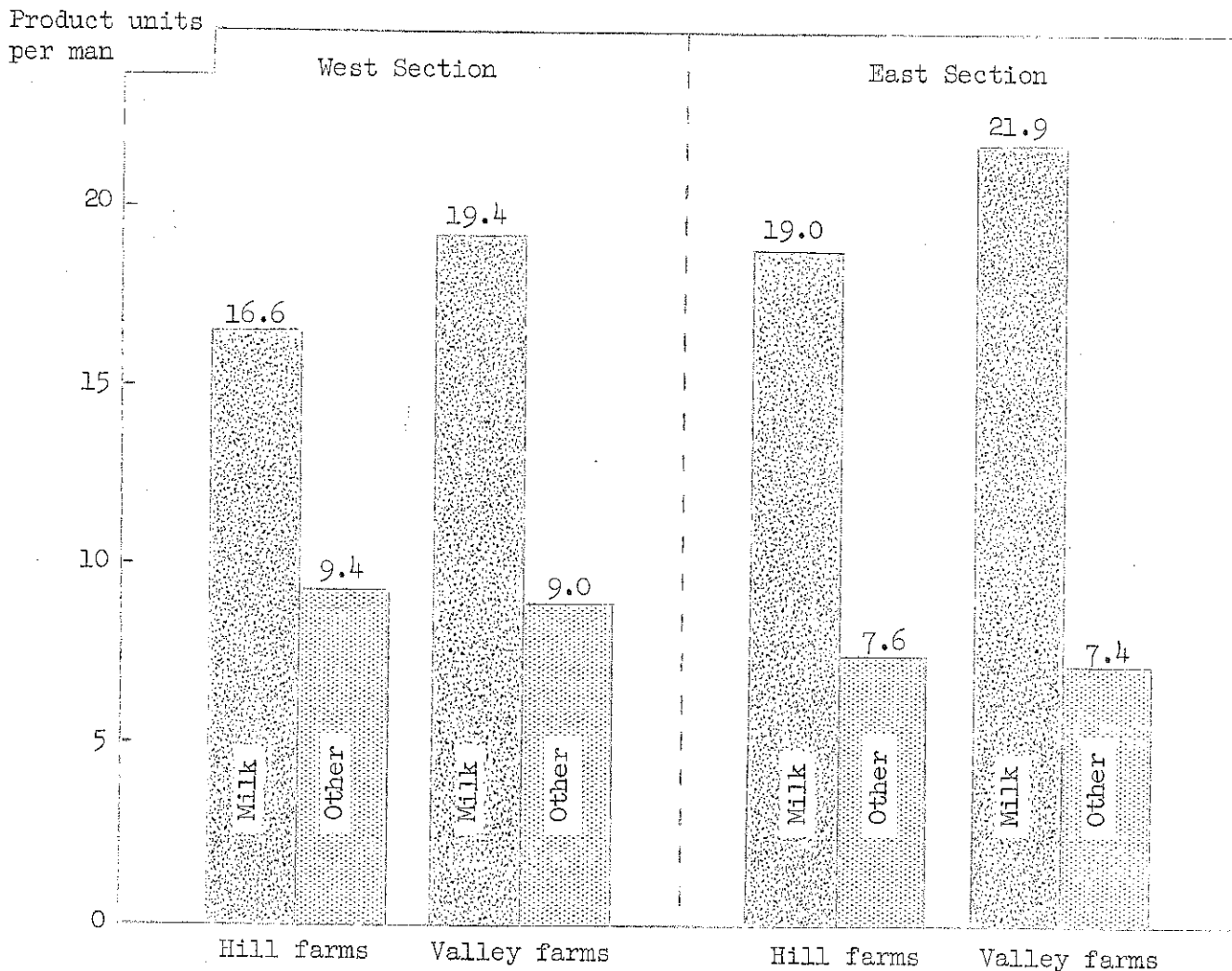


Figure 1. PRODUCT UNITS PER FARM, BY GROUPS OF FARMS

COOPERATIVE EXTENSION WORK IN AGRICULTURE
AND HOME ECONOMICS, STATE OF NEW YORK

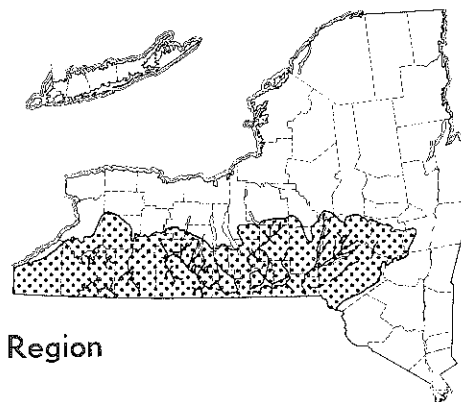
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ITHACA, NEW YORK

Dairy Farming



in the



Plateau Region

Letter No. 5

July 14, 1959

To Farmers Visited on
Farm Management Survey:

A description of the capital invested in the dairy farms, with special reference to power and machinery investment and expense, is the subject of this fifth letter of the series.

Total capital. That it takes a lot of money to be in the dairy business is shown by the investment figures for the 1,075 farms included in this study. The total capital amounted, on the average, to about \$34,000 per farm:

Items	Per farm	% of total
Land & buildings	\$17,090	49
Livestock	9,890	29
Power & machinery	7,150	21
Feeds & supplies	320	1
Total	\$34,450	100

Land, including 244 total acres (85 crop acres) and buildings, used to house 28 milk cows and accompanying stock, were valued at \$17,000 per farm, or \$600 per milk cow in the herd. This real estate, which includes the farmer's residence, accounted for about one-half of the total capital.

The investment in livestock was about \$9,900 per farm, or nearly 30 percent of the total. The average inventory value of the milk cows was \$263 per head.

The capital invested in power and machinery accounted for \$7,150 per farm, or about 20 percent, of the total capital. This figure is the current depreciated value of the machinery, not its cost new.

With the inventory date (April 30) near the end of the barn-feeding season, the investment in feeds and supplies was at a seasonal low point and amounted to only one percent of the total capital.

Variation in total capital. The amount of capital invested in these farms varied strikingly. Every farmer had land and buildings, although the size of the farm and the condition of the buildings varied widely from farm to farm. And, of course, every farmer had cattle, with wide variations in both size of herd and inventory price per head. Not every dairyman had his farm equally well equipped. Practically all of the farms had one or more tractors, but fewer than 10 percent of them had bulk milk tanks. Hay balers and field choppers were commonly reported.

These differences in amounts of physical properties were reflected in the capital per farm. Total capital of less than \$20,000 per farm was found on only 20 percent of the farms. A range of \$20,000 to \$40,000 included about one-half of them.

Total capital of \$60,000 or more was reported on 8 percent, and \$80,000 or more of capital was invested in 3 percent of all farms:

<u>Capital per farm</u>	<u>Number of farms</u>	<u>Percent of farms</u>
Less than \$20,000	210	20
20,000 to 40,000	559	52
40,000 to 60,000	214	20
60,000 to 80,000	58	5
80,000 or more	34	3
Total	1,075	100

The average investment in power and machinery amounted to \$255 per cow. The top 10 percent of the farms in power and machinery investment per cow had more than double the average of all farms. The bottom 10 percent had only one-third as much. That is, if the average farm had as much power and machinery as the top 10 percent, the investment in this item would be about \$15,000 per farm. This figure gives a rough idea of future capital requirements in this phase of dairy farm operation alone, as the trend toward more mechanization continues.

Capital by groups of farms. As might be expected, the total capital per farm was about 25 percent higher for the valley farms than for the hill farms in both sections of the region. The valley farms had more capital in each of the four categories, but the largest percentage as well as dollar difference was in the real estate.

In the western section, the valley farms had 4 more cows and the real estate was valued \$5,800 higher than on the hill farms; in the east, the valley farms carried 3 more cows and were valued \$4,800 higher than the hill farms:

<u>Groups</u>	<u>Cows per farm</u>	<u>Real estate per farm</u>
West		
Hill farms	25	\$15,880
Valley farms	29	21,710
East		
Hill farms	29	\$15,810
Valley farms	32	20,650

Real estate values per cow were higher in the western section than in the east. In both sections of the region, the valley farms were valued at a little more than \$100 per cow higher than the hill farms.

The capital invested in power and machinery per cow was similar on hill and valley farms, but was larger in the western section than in the east because of more crops produced:

<u>Groups</u>	<u>Investment per cow</u>	
	<u>Real estate</u>	<u>Power and machinery</u>
West		
Hill farms	\$635	\$275
Valley farms	754	271
East		
Hill farms	\$538	\$239
Valley farms	644	240

Power and machinery depreciation. Depreciation on power and machinery for the year was calculated by subtracting the end inventory value from the total of the beginning inventory and net purchases. The increasing mechanization on these farms is shown by the fact that the net purchases (\$1,288) exceeded the depreciation (\$935) by about \$350 per farm:

<u>Items</u>	<u>Amount per farm</u>
Beginning inventory	\$6,797
Net purchases	1,288
Total	\$8,085
End inventory	7,150
Depreciation	\$ 935

Power and machinery expense. The depreciation and other major expenses for power and machinery were calculated for each farm. Credits for income from custom work and gasoline tax refunds were deducted to obtain the net total of expense for the year. For all farms, the total expense amounted to nearly \$3,000 per farm and the net expense to about \$2,900:

<u>Items</u>	<u>Amount per farm</u>
Depreciation	\$ 935
Interest on investment	348
Gasoline, oil and grease	444
Repairs	330
Tires, license & insurance	127
Bale ties	71
Milk hauling	276
Machine hire	132
Auto (farm share)	165
Electricity (farm share)	167
Total	<u>\$2,995</u>
Income from custom work	59
Gasoline tax refunds	52
Total (net)	<u>\$2,884</u>

Interest on the investment in power and machinery was figured at a 5 percent rate and amounted to about \$350 per farm. This item of interest together with depreciation accounted for more than 40 percent of the total power and machinery expense. About \$450 per farm was spent for gasoline, oil and grease. Repairs were \$330 and bale ties about \$70. Hired milk hauling came to \$276 and machine hire \$132. The farm share of auto expense and electricity were each about \$165 per farm.

For all farms, the average power and machinery expense amounted to \$103 per cow. As with the investment, the expense per cow was much larger on some farms than others. The top 10 percent of the farms in power and machinery expense per cow had nearly double the expense on the average farm. The bottom 10 percent had only about one-half as much.

As was true with the investment, the expense per cow was similar on hill and valley farms, but was about \$20 larger in the west than in the east because of more crops raised:

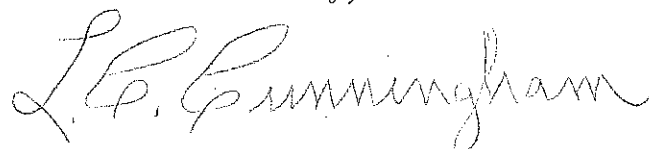
<u>Groups</u>	<u>Expense per cow</u>
West	
Hill farms	\$115
Valley farms	113
East	
Hill farms	\$ 94
Valley farms	92

Because of the importance of mechanization in present-day dairy farming, you are urged to make the necessary calculations to show the investment in and expense for power and machinery in your own operations. A table with appropriate blanks for your farm and the averages for the different items by the four groups of farms is reproduced on the last page of this letter. Compare your figures with the averages of the group in which your farm belongs. Your county agricultural agent will help with the figures if needed.

An expense of only \$50 per cow for power and machinery may mean too little mechanization for efficient use of labor. At the other extreme, an expense of \$200 per cow suggests overmechanization and may lead to financial difficulty unless the output of labor is unusually large. A reasonable goal is \$100 of expense per cow.

Our next letter will include a description of the incomes of the farms in the study.

Yours truly,



L. C. Cunningham
Extension Economist

POWER AND MACHINERY EXPENSE PER FARM, BY GROUPS OF FARMS
Plateau Region, New York
1957-58

Items	West		East		Your farm
	Hill	Valley	Hill	Valley	
Beginning inventory	\$6,627	\$7,687	\$6,605	\$7,132	_____
Net purchases	<u>1,192</u>	<u>1,233</u>	<u>1,312</u>	<u>1,543</u>	_____
Total	\$7,819	\$8,920	\$7,917	\$8,675	_____
End inventory	6,890	7,819	7,038	7,692	_____
Depreciation	\$ 929	\$1,101	\$ 879	\$ 983	_____
Interest at 5 percent	338	389	338	374	_____
Gasoline, oil and grease	433	460	429	510	_____
Repairs	318	355	331	344	_____
Tires, license and insurance	115	131	138	121	_____
Bale ties	70	74	69	79	_____
Milk hauling	338	337	231	185	_____
Machine hire	131	170	124	125	_____
Auto (farm share)	162	147	173	161	_____
Electricity (farm share)	<u>161</u>	<u>182</u>	<u>160</u>	<u>194</u>	_____
Total	\$2,995	\$3,346	\$2,872	\$3,076	_____
Custom work	56	32	61	81	_____
Gasoline tax refunds	<u>54</u>	<u>54</u>	<u>48</u>	<u>58</u>	_____
Total (net)	\$2,885	\$3,260	\$2,763	\$2,937	_____
Milk cows per farm	25	29	29	32	_____
Expense per cow	\$115	\$113	\$94	\$92	=====

COOPERATIVE EXTENSION WORK IN AGRICULTURE
AND HOME ECONOMICS, STATE OF NEW YORK

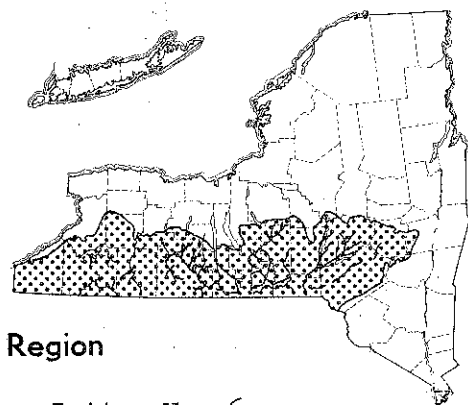
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Dairy Farming



in the



Plateau Region

Letter No. 6

September 8, 1959

To Farmers Visited on
Farm Management Survey:

How much income do dairy farmers make? What are the important items of expenses and receipts? How do incomes vary among farms? This sixth letter of the series contains some figures bearing on these topics.

In previous letters, the capital investment and the labor force were described. Power and machinery expenses were listed in some detail. Let us now look at complete lists of expenses and receipts for the hill and valley groups of farms.

Operating expenses. Total operating expenses on the 823 hill farms in the Plateau region amounted to about \$7,500 per farm and on the 252 valley farms to \$8,400 per farm. Feed bought averaged about \$2,700 in both groups. The expense for hired labor was nearly \$600 on the hill farms and \$900 on the valley farms. Some \$600 was for livestock bought. Expenses for power and machinery on the hill farms included about \$430 for gasoline, oil and grease, \$325 for repairs, \$168 for farm share of auto, \$129 for machine hire and \$283 for milk hauling. Similar amounts for these items were spent on the valley farms. Building repairs were about \$250. Real estate taxes of \$432 and fire insurance of \$155 on the valley farms were both higher than on the hill farms. Crop expenses on the hill

farms included \$164 for seeds, \$315 for fertilizer and \$179 for lime. These items were partially offset on the income side by \$82 of ACP payments. Veterinary, dairy supplies and testing, and breeding fees were each about \$100:

Items	Per farm	
	Hill	Valley
Feed bought	\$2,680	\$2,736
Labor hired	583	916
Livestock bought	585	611
Gasoline, oil, grease	431	487
Power & mach. repairs	324	349
Auto (f.s.)	168	155
Machine hire	129	148
Milk hauling	283	259
Building repairs	283	251
Real estate taxes	314	432
Fire insurance	119	155
Seeds	164	199
Fertilizer	315	363
Lime	179	224
Veterinary	102	121
Dairy supplies & test.	85	95
Breeding fees	80	100
Electricity & tel.	196	228
Miscellaneous	460	528
Total	\$7,480	\$8,357

Note in the above list that only farm items are included. No household expenses are listed. Also note that family labor and interest payments are excluded here. These two items will be treated later.

Operating receipts. Total operating receipts amounted to nearly \$12,000 for the hill farms and \$14,000 for the valley farms. In both groups, milk accounted for about 80 percent of the total. The average price received per 100 pounds of milk, on a 3.7 percent butterfat basis, was \$4.58 in the hill group and \$4.62 in the valley group. Cattle and other livestock sales averaged about \$1,400 in each group. Crop sales were only about \$300. Work off the farm, ACP payments and other miscellaneous receipts amounted to about \$500:

Items	Per farm	
	Hill	Valley
Milk	\$ 9,448	\$11,411
Other L.S.products	230	299
Livestock	1,363	1,453
Crops	306	317
Miscellaneous	509	533
Total	\$11,856	\$14,013

Net operating income. The financial results of a farm business can be summarized in many ways. Perhaps the simplest way is to show the difference between the operating receipts and expenses. The average operating income of the hill farms was about \$4,400 and that of the valley farms \$5,600:

Items	Per farm	
	Hill	Valley
Operating receipts	\$11,856	\$14,013
Operating expenses	7,480	8,357
Net oper. income	\$ 4,376	\$ 5,656

Our purpose in this study is to measure the financial success of the farm business in terms of income to the farm operator for his year's work and management. To do this, it is necessary to take into account (1) wage allowance for family labor on the farm, (2) changes in capital items, and (3) interest on the investment. Our next step then is to add to the operating expenses the

following:

Items	Per farm	
	Hill	Valley
Family labor, exc.oper.	\$526	\$375
Power & mach.bought	1,318	1,376
New buildings	189	337
Operating expenses	7,480	8,357
Total expenses	\$9,513	\$10,445

To the operating receipts is added the net increase in inventory, which takes into account changes in capital:

Items	Per farm	
	Hill	Valley
Inventory increase	\$1,103	\$1,288
Operating receipts	11,856	14,013
Total receipts	\$12,959	\$15,301

The next item to be taken into account in our summary is interest on capital. To have a comparable measure among farms, an interest charge on the total capital is made, not just interest actually paid:

Items	Per farm	
	Hill	Valley
Total receipts	\$12,959	\$15,301
Total expenses	9,513	10,445
Farm income	\$ 3,446	\$ 4,856
Interest @ 5%	1,604	1,985
Farm labor income	\$ 1,842	\$ 2,871
Labor income p.oper.	\$ 1,703	\$ 2,658

Deducting the interest charge of \$1,604 from the farm income of the hill farms leaves a farm labor income of \$1,842. Since some farms were operated as partnerships the labor income per operator was \$1,703, or about \$140 a month. For the valley farms, the average operator labor income was \$2,658, or nearly \$225 a month.

Operator labor income as our measure of financial success will be used to compare groups of farms. If comparisons are to be made with

incomes of non-farm workers, the value of the living including house, obtained from the farm should be added. Thus, the labor earnings per operator of the hill farms were about \$2,400 and of the valley farms \$3,400:

Items	Per farm	
	Hill	Valley
Living from farm(est.)	\$720	\$720
Labor income p.oper.	1,703	2,658
Labor earnings p.oper.	\$2,423	\$3,378

None of these measures necessarily shows the amount of income available for living and saving on individual farms, however, because of variations in (1) amount of indebtedness, and (2) other income of the family.

Income comparisons. Average hired men's wages per month with house were reported in letter number 4 to be \$192 in the Plateau region. Thus, the average labor income of these valley dairy farmers was above and that of the hill dairy farmers considerably below average hired men's wages. Over a long period of years in New York farming, average incomes of farmers have about equalled hired men's wages, although there have been wide differences in many years.

Reported here is, of course, a cross section of all commercial dairy farms. The average labor income of a selected group of 464 dairy farms in Central New York, those in the farm account projects, was \$3,764 for 1957, as compared with the \$1,703 for the hill farms and \$2,658 for the valley farms.

Another comparison of interest is of incomes of farms in the Plateau region with incomes of commercial dairy farms in other regions, even though the figures are for different years. Economic conditions were similar, except for a somewhat

lower milk price in 1955-56. The average labor income of 556 such farms in the North Country region was \$891, and that of 371 farms in the Central Plain region was \$3,135. Differences in land resources and market conditions as they are reflected in how the farms are organized and operated largely account for these different levels of incomes:

Region	Year	Average labor income
Plateau		
Hill	1957-58	\$1,703
Valley	1957-58	2,658
North Country	1955-56	891
Central Plain	1953-54	3,135

West section versus east. As earlier descriptions of the farms have suggested, there were important income differences between the western and eastern sections of the Plateau region. Among the hill farms, those in the eastern section made, on the average, about \$500 more income than those in the west. Even more striking, the valley farms in the east made some \$1,500 more than those in the west:

Section of region	Price per 100 lbs. of milk	Labor income
Hill farms		
West	\$4.50	\$1,451
East	4.63	1,957
Valley farms		
West	\$4.58	\$1,776
East	4.66	3,310

Part of these differences is due to the price of milk. The hill farms nearer to market received 13 cents per hundredweight more and the valley farms 8 cents more for milk than the respective groups in the west. More important, however, is the fact that the valley floors in the eastern section are generally wider and make possible larger and

more intensive farming operations than in the western part of the region.

Variation in individual farm incomes.

In sharp contrast to incomes of most industrial workers, incomes of individual farmers varied widely from the averages of \$1,703 for all hill farms and of \$2,658 for all valley farms.

Among the hill farms, 25 percent of them failed to make a plus labor income, and, in fact, some of these farmers suffered serious losses. If free of debt, some of these farmers get by, but with a relatively low standard of living. Others of them go into debt and in extreme cases are forced out of farming. This situation is not new nor confined to this region alone. Here as elsewhere some farmers are just not able to make adjustments that are necessary in a changing agriculture.

More than one-third (36 percent) of the hill farms had labor incomes within the range of zero to \$2,000. Other hill farmers were more successful. Sixteen percent of them made at least \$4,000 and three percent made \$8,000 or more. For those people who are inclined to "write off" hill farms, careful study of these income figures should be worthwhile.

A similar wide distribution of labor incomes was found among the valley farms. The main difference was somewhat fewer farms in the loss groups and more farms in the high income brackets. About 20 percent of the valley farms failed to make a plus labor income, but thirty percent of them made at least \$4,000 and six percent had incomes of \$8,000 or more.

Roughly speaking, the chances of making a high income were nearly twice as great on a valley farm as on a hill farm:

<u>Labor income</u>	<u>Percent of farms</u>	
	<u>Hill</u>	<u>Valley</u>
\$-2,001 or lower	5	4
-2,000 to -1	20	17
0 to 1,999	36	28
2,000 to 3,999	23	21
4,000 to 5,999	9	17
6,000 to 7,999	4	7
8,000 or more	3	6
Total	100	100

From the foregoing description of the incomes of dairymen in the Plateau region we may conclude that:

- (1) the year 1957-58 in comparison with other years of the post-Korean period was reasonably favorable,
- (2) despite the small differences in prices received for milk, wide differences in labor incomes were found, which suggest that alternative job opportunities will continue to attract many farm families away from dairying, and
- (3) the comparatively good incomes of the upper one-third of the farmers lend encouragement for the future.

To show how these farmers were able to do so well in relation to their neighbors is the subject of the remaining letters in this series.

Yours truly,

L. C. Cunningham
Extension Economist

COOPERATIVE EXTENSION WORK IN AGRICULTURE
AND HOME ECONOMICS, STATE OF NEW YORK

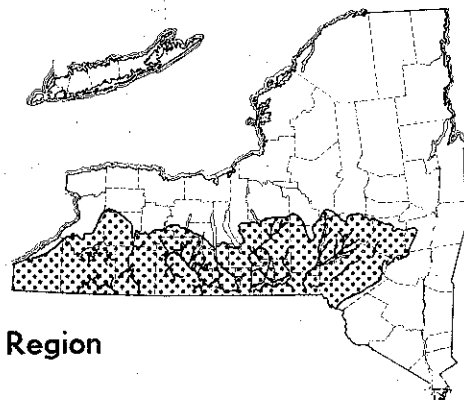
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AGRICULTURAL ECONOMICS
ITHACA, NEW YORK

Dairy Farming



in the



Plateau Region

Letter No. 7

October 20, 1959

To Farmers Visited on
Farm Management Survey:

Some of the differences in labor incomes of individual farms described in our last letter was due to differences in the yields of crops. The relation of yields to income and the relation of some farming practices to yields are described in this letter.

But, first, what were the farms like that had different crop yields? The farms were sorted into groups according to the crop yield index of each farm and important factors and incomes were tabulated. Crop yield index is the percentage that crop yields per acre of a farm are of the average yields in the region.

Crop Yields

On dairy farms where the crops are used almost entirely for feed, as in this study, crop yields are related to income through their effect on the feed supply and hence on the number of cows kept, the rate of milk flow per cow and the feed bill.

Relation to roughage supply. High crop yields paid off in more feed for the cattle. On both hill and valley farms with the lowest crop yields, only about 3.8 tons of hay equivalent

was harvested per cow, but on farms with the highest yields, about 6.0 tons of roughage was supplied per cow. This held true despite the fact that the acres of crops per cow were smaller on the high-yield farms than on the low-yield farms:

<u>Range</u>	<u>Average</u>	<u>Tons H. E. Crop harvested per cow</u>	<u>Crop acres per cow</u>
<u>hill farms</u>			
Less than 70	56	3.8	3.9
70 to 89	80	4.6	3.4
90 to 109	99	5.0	3.2
110 to 129	119	5.3	2.7
130 or more	145	6.0	2.7
<u>valley farms</u>			
Less than 70	59	3.7	3.6
70 to 89	82	4.2	3.0
90 to 109	99	5.0	3.2
110 to 129	120	5.1	2.7
130 or more	151	5.9	2.3

Relation to other factors. On both hill and valley farms, the higher the crop yields the larger the average size of herd and the larger the number of cows cared for per man. Likewise, crop yields were linked to the rate of milk production. As crop

yields rose, the amount of milk sold per cow increased. Purchased feed expense per cow stayed about the same, however, so the percentage of milk sales that was spent for purchased feed tended to decline. The milk response to increased crop yields, although not uniform in either group, was somewhat greater on valley farms than on hill farms.

Relation to income. As might be expected, average labor incomes rose as crop yields increased on both hill and valley farms. With below-average yields, incomes were relatively low. As yields increased, incomes went up. With high yields, incomes were good:

Range	Crop yield index Average	Number of farms	Average labor income		
				hill farms	valley farms
Less than 70	56	111	\$ 800		
70 to 89	80	207	1,320		
90 to 109	99	255	1,580		
110 to 129	119	154	2,300		
130 or more	145	96	3,030		
Less than 70	59	17	\$ 500		
70 to 89	82	42	1,280		
90 to 109	99	65	3,020		
110 to 129	120	65	2,810		
130 or more	151	63	3,630		

With high yields, herds were larger and milk per cow was higher on valley farms than on hill farms. Therefore, with high yields, incomes were somewhat higher on valley farms than on hill farms. In other words, it paid to get good crop yields, especially on the valley farms.

Practices Related to Crop Yields

What did farmers do to get good crop yields? As has already been pointed out, average crop yields were somewhat higher on the water-laid soils (valley farms) than on the glacial till soils (hill farms):

Groups	Average per acre		
	Tons hay	Tons corn sil.	Bu. oats
Hill farms	1.8	9.2	53
Valley farms	2.1	10.8	57

But in both groups of soils there were wide differences in yields on individual farms.

High crop yields were the result of many farming practices. Among those which could be analyzed in this study were frequency of reseeding of hayland, intensity of stocking, and application of fertilizer and lime. The relation of each practice to crop yields is emphasized. It is not feasible to determine precisely and separately the relation of each particular practice to income. Obviously, many practices like reseeding and fertilizing are combined on the same farms, so the relation of one practice to yields and income is influenced at the same time by other practices.

Percent new seeding. The larger the percentage of the hayland that was new seeding, the higher the crop yields in both groups of farms. But the differences in yields were small. Average labor incomes indicate little or no economy in frequent reseeding on hill farms and upper limits of about one-third of the hayland of reseeding on

valley farms:

<u>Percent of hayland in new seeding</u>		<u>Crop yield index</u>	<u>Average labor income</u>
<u>Range</u>	<u>Average</u>		
<u>hill farms</u>			
Zero	0	97	\$ 1,800
1 to 24	14	92	1,420
25 to 49	33	105	2,160
50 or more	70	106	1,580
<u>valley farms</u>			
Zero	0	107	\$ 1,450
1 to 24	16	110	2,930
25 to 49	33	117	3,160
50 or more	67	108	2,340

Crop expense per crop acre. Crop expenses included here are seeds, fertilizer, lime and weed sprays. Farms with low crop expense per crop acre had low yields. As more was spent, average yields increased moderately and labor incomes rose, indicating that the practices for which the money was spent were profitable on both hill and valley farms. The average expenditure in the highest groups was about \$18 per crop acre:

<u>Crop expense per crop acre</u>		<u>Crop yield index</u>	<u>Average labor income</u>
<u>Range</u>	<u>Average</u>		
<u>hill farms</u>			
Less than \$5	\$ 2	83	\$ 810
5 to 9	7	99	1,650
10 to 14	11	107	2,370
15 or more	18	114	3,010
<u>valley farms</u>			
Less than \$5	\$ 2	98	\$ 860
5 to 9	7	115	3,090
10 to 14	12	111	2,980
15 or more	19	124	3,470

Intensity of stocking. The farms that were stocked the heaviest with cattle in relation to the cropland had the highest crop yields, because of the additional plant food from manure. On hill farms, for example, farms that were lightly stocked, 5.0 or more crop acres per cow, had an average crop yield index of only 87. In contrast, farms that were heavily stocked, less than 2.0 crop acres per cow, had a crop yield index of 110. A similar relationship was found on the valley farms.

On both hill and valley farms, the most profitable intensity of stocking appeared to be 2 to 3 crop acres per cow:

<u>Crop acres per cow</u>		<u>Crop yield index</u>	<u>Average labor income</u>
<u>Range</u>	<u>Average</u>		
<u>hill farms</u>			
Less than 2.0	1.6	110	\$ 2,050
2.0 to 2.9	2.5	102	2,160
3.0 to 3.9	3.4	94	1,410
4.0 to 4.9	4.4	91	1,540
5.0 or more	6.5	87	1,010
<u>valley farms</u>			
Less than 2.0	1.6	124	\$ 2,430
2.0 to 2.9	2.4	116	3,110
3.0 to 3.9	3.4	102	2,560
4.0 to 4.9	4.4	101	1,900
5.0 or more	6.4	88	2,290

The hay equivalent harvested per cow on the heavily stocked farms was small, however, because the increased yield per acre was more than offset by the smaller area of cropland per cow.

This, in turn, limited the rate of milk production per cow on the heavily-stocked farms:

Crop acres per cow	Tons H. E. harvested per cow	Lbs. milk sold per cow		
			Range	Average
<u>hill farms</u>				
Less than 2.0	1.6	3.5	7,230	
2.0 to 2.9	2.5	4.5	7,730	
3.0 to 3.9	3.4	5.5	7,310	
4.0 to 4.9	4.4	5.9	7,490	
5.0 or more	6.5	7.2	7,490	
<u>valley farms</u>				
Less than 2.0	1.6	4.0	7,690	
2.0 to 2.9	2.4	4.9	7,850	
3.0 to 3.9	3.4	5.8	8,170	
4.0 to 4.9	4.4	6.0	7,760	
5.0 or more	6.4	7.7	8,110	

Manure and commercial fertilizer.

The rate of stocking the cropland with cattle influenced crop yields through the amount of manure produced. The amount of plant food available from stable manure produced on each farm was calculated. It was assumed that 8 tons of manure was produced, other than that on pasture, per cow or other animal unit, and that a ton of manure contained 10 pounds of nitrogen, 5 pounds of phosphoric acid, and 10 pounds of potash. The actual amount of plant food available for the crops depended on how the manure was handled. The common practice on most farms was to spread the manure daily. For the few who did not follow this practice, the calculation overstates the actual situation. On hill farms, for example, nearly 300 tons of stable manure was produced per farm. This amounted to 3.5 tons, containing 87 pounds of plant food, available per crop acre.

Practically all of the farmers used some commercial fertilizer on their 1957 crops. The total amount of commercial fertilizer applied to cropland on the hill farms amounted to the equivalent of 120 pounds of 10-10-10 mixed fertilizer, or 36 pounds of plant food, per crop acre. On valley farms, the average rate was 41 pounds per acre. Manure was much more important than commercial fertilizer as a source of plant food:

Source	Pounds per acre	
	hill farms	valley farms
Manure	87	94
Comm. fertilizer	36	41
Total	123	135

As might be expected, manure and commercial fertilizer combined had a strong influence on crop yields. On both hill and valley farms, as the amount of plant food per crop acre available from these two sources increased, crop yields rose in striking fashion. The yield response was somewhat greater on the valley farms than on the hill farms (see chart). Average labor incomes provide strong evidence that it paid to fertilize the soils:

Pounds of plant food per crop acre	Crop yield index	Average labor income		
			Range	Average
<u>hill farms</u>				
Less than 100	75	82	\$1,050	
100 to 149	119	97	1,700	
150 to 199	166	108	1,990	
200 or more	243	113	2,630	
<u>valley farms</u>				
Less than 100	79	90	\$1,430	
100 to 149	120	104	2,630	
150 to 199	167	122	3,120	
200 or more	232	129	2,900	

In summary, good crop yields - around 50 percent above the average of the region - were profitable. Crop yields were closely linked to both size of herd and milk production per cow for the obvious reason that high yields provided more feed.

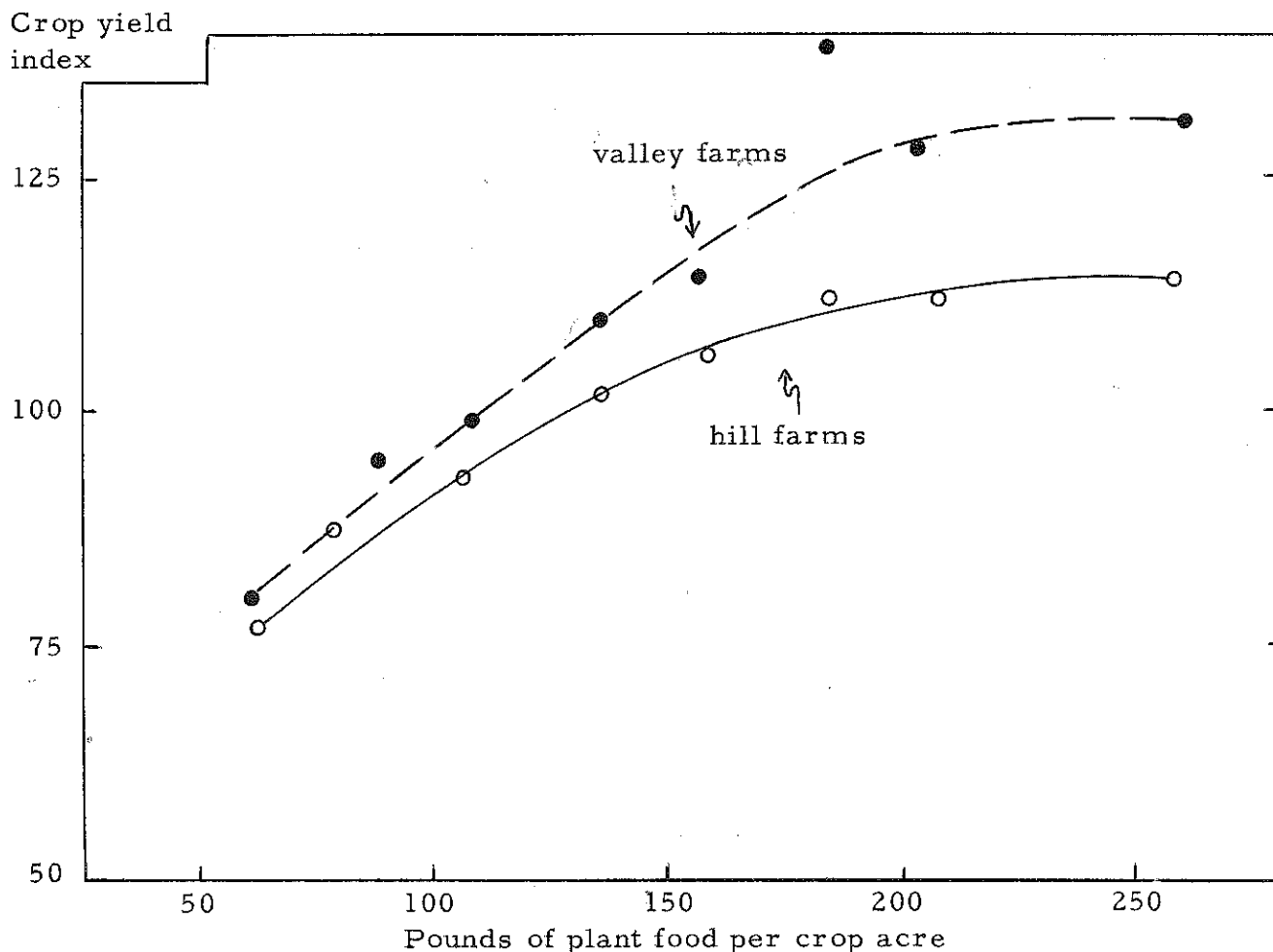
Average crop yields were higher on valley farms than on hill farms. Supplying additional plant food was the outstanding practice to improve yields on both hill and valley farms. Moderately heavy stocking of the cropland (2.5 to 3.0 crop acres per cow) and liberal application of commercial fertilizer were both profit-

able practices. That is, a 30-cow dairy should have 75 to 90 acres of crops for harvest. The balance of the plant food would be supplied by the purchase of commercial fertilizer. This combination of intensity of stocking and fertilizer application would provide the desired 6 tons of hay equivalent for harvest in a normal crop season per milk cow in the herd.

Yours truly,



L. C. Cunningham
Extension Economist



Relation of Amount of Plant Food Available per Crop Acre to Crop Yields

COOPERATIVE EXTENSION WORK IN AGRICULTURE
AND HOME ECONOMICS, STATE OF NEW YORK

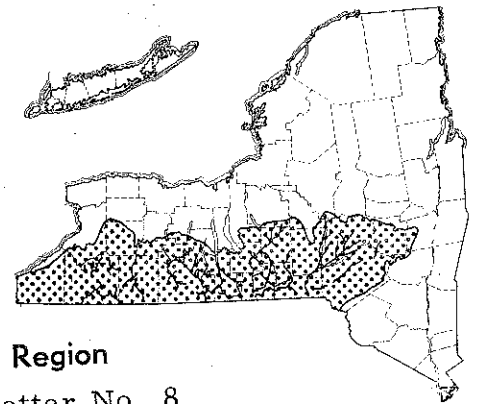
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ITHACA, NEW YORK

Dairy Farming



in the



Plateau Region

Letter No. 8

December 7, 1959

To Farmers Visited on
Farm Management Survey:

Experiences of large numbers of farmers are particularly useful in determining the incomes from herds of different levels of milk production and how much feed to raise and how much to buy to obtain high milk production.

Milk per Cow

To determine the relationship of milk per cow to income, the records were sorted into groups according to the amount of milk sold per cow. Important factors and incomes were tabulated for each group.

Relation to other factors. Farmers with good cows generally had high crop yields. Also, herds were somewhat larger and as many cows were cared for per man on farms with good cows as on those with poor cows.

Relation to input factors. As the amount of milk sold per cow went up from group to group, the average amounts of both hay equivalent harvested per cow and of purchased feed per cow increased to provide the necessary feed. The increase in

feed bought was larger on the hill farms than on the valley farms. Power and machinery expense per cow and crop expense per crop acre also rose. These two items were, of course, involved in producing the additional feed. Real estate expense per crop acre showed little or no change.

Relation to income. Financial success of the farm business hinged to a large degree on the level of milk production per cow. On hill farms with low milk production, 5,000 pounds or less per cow, severe losses averaging nearly \$1,000 a farm were incurred, and there was no chance of making a high income. Even with sales in the range of 5,000 to 6,000 pounds per cow, the farms as a group failed to make a plus labor income. Twenty-two percent of them lost \$1,000 or more and none made a good income. A level of at least 8,000 pounds per cow was necessary to make a labor income equal to going hired men's wages. High levels of production paid well. The average income of farms with 11,000 pounds or more of milk per cow averaged

about \$5,000. No one of the farms in this group lost as much as \$1,000 and 41 percent made \$5,000 or more.

A similar and even more striking relationship between milk per cow and income was found on the valley farms. With the lowest level of production, less than 5,000 pounds per cow, the average loss per farm was about \$2,000. In the highest production group, the average labor income exceeded \$5,800; none of the farms had a loss of as much as \$1,000 and half of them made \$5,000 or more:

<u>Pounds of milk sold per cow</u>	<u>Number of farms</u>	<u>Average labor income</u>
	<u>hill farms</u>	
Less than 5,000	74	\$ -960
5,000 to 5,999	105	-20
6,000 to 6,999	147	1,050
7,000 to 7,999	176	1,520
8,000 to 8,999	133	2,560
9,000 to 9,999	100	3,400
10,000 to 10,999	61	3,940
11,000 or more	27	5,230
	<u>valley farms</u>	
Less than 5,000	17	\$-2,010
5,000 to 5,999	18	-100
6,000 to 6,999	47	900
7,000 to 7,999	49	2,200
8,000 to 8,999	50	3,580
9,000 to 9,999	31	5,130
10,000 to 10,999	25	5,210
11,000 or more	15	5,830

A 1,000-pound increase in milk per cow meant on the average a boost in labor income of nearly \$900 on hill farms and of \$1,100 on valley farms.

Feeding Practices

Of the many things that bear on the amount of milk a cow produces in a year, forage production and feeding practices received major attention in this study.

Amount of roughage. The amount of roughage production was a key factor in the rate of milk flow per cow. On both hill and valley farms, as the amount of hay equivalent harvested per cow increased, the amount of milk sold per cow went up, except in the highest-roughage groups. The response was somewhat greater on valley farms than on hill farms. The increase in milk per cow occurred despite the fact there was a tendency to reduce the amount of feed bought as roughage production increased:

<u>Range</u>	<u>Tons of H. E. harv. per cow</u>	<u>Average</u>	<u>Feed bought per cow</u>	<u>Pounds of milk sold per cow</u>
	<u>hill farms</u>			
Under 3.0	2.4	\$ 102	6,910	
3.0 to 3.9	3.5	92	6,900	
4.0 to 4.9	4.4	89	7,530	
5.0 to 5.9	5.5	89	7,760	
6.0 to 6.9	6.4	90	7,940	
7.0 or more	8.4	85	7,690	
	<u>valley farms</u>			
Under 3.0	2.6	\$ 83	6,500	
3.0 to 3.9	3.4	87	7,240	
4.0 to 4.9	4.5	93	8,010	
5.0 to 5.9	5.4	80	8,050	
6.0 to 6.9	6.5	88	8,630	
7.0 or more	8.0	74	8,360	

Average labor income rose moderately as the amount of roughage increased.

Kind of roughage. Farms with hay and silages had higher average milk production per cow than those with hay only. Furthermore, those with both corn silage and grass silage combined with hay got better results than the farms with corn silage and hay. It is important to note that the combinations of roughages provided more hay equivalent per cow than hay alone:

<u>Kind of roughage</u>	<u>Tons H. E. harvested per cow</u>	<u>Pounds of milk sold per cow</u>
	<u>hill farms</u>	
Hay only	4.3	6,780
Hay, corn silage	5.3	7,460
Hay, grass silage		
corn silage	5.6	7,920
	<u>valley farms</u>	
Hay only	3.7	7,110
Hay, corn silage	5.2	7,660
Hay, grass silage		
corn silage	5.7	8,690

Somewhat more feed per cow was bought on the hay farms than in the other groups. Size of herd was much larger on the farms with the mixtures of roughages than on the hay farms. The hay farms made the lowest average labor incomes and the hay, grass and corn silage farms made the highest incomes in both hill and valley groups.

Date of hay harvest. Farmers' experiences as well as experimental results show that early cut hay produces more milk than late cut hay.

On hill farms, for instance, milk per cow averaged about 8,000 pounds on farms where the first cutting of hay was completed by the end of June, compared with only about 6,900 pounds per cow on farms where no harvesting was done by June 30. Although the average amount of purchased feed per cow was about the same in these groups of farms with different hay harvesting dates, the early-harvest groups did have more hay equivalent per cow than the late-harvest groups. So, obviously the increase in milk per cow was linked to the amount as well as the date of harvest of the forage.

Likewise, on valley farms, the earlier the hay harvest, the larger the hay equivalent harvested per cow and the higher the amount of milk per cow:

<u>Percent hay harvested by June 30</u>	<u>Tons H. E. harvested per cow</u>	<u>Pounds of milk sold per cow</u>
	<u>hill farms</u>	
None	4.5	6,870
1 to 49	4.9	7,390
50 to 59	5.3	7,820
60 to 99	5.0	8,000
100 or more	5.0	7,980
	<u>valley farms</u>	
None	4.5	6,760
1 to 49	5.1	7,590
50 to 59	5.1	8,120
60 to 99	5.6	8,900
100 or more	5.4	8,580

Even when sorted first into groups by the amount of hay equivalent per cow to hold this factor constant and then sorted by date of hay harvest,

on both hill and valley farms, the early-cut group had an increase in milk per cow over the late-cut group at each level of hay equivalent harvested per cow.

Purchased feed per cow. Most important of the practices related to the rate of milk production per cow was the amount of feed bought per cow. On both hill and valley farms, as the amount spent for feed increased, milk per cow went up fairly regularly and rapidly. On valley farms, the amount of hay equivalent harvested per cow remained about the same as feed per cow increased. But on the hill farms, the hay equivalent went down as purchased feed went up:

<u>Feed bought per cow</u>	<u>Tons H. E. harvested per cow</u>	<u>Pounds of milk sold per cow</u>
	<u>hill farms</u>	
Less than \$50	5.5	6,250
50 to 74	4.9	6,710
75 to 99	5.0	7,180
100 to 124	5.0	7,960
125 or more	4.7	8,930
	<u>valley farms</u>	
Less than \$50	5.1	6,720
50 to 74	5.0	7,430
75 to 99	5.3	8,130
100 to 124	5.0	8,330
125 or more	5.0	9,090

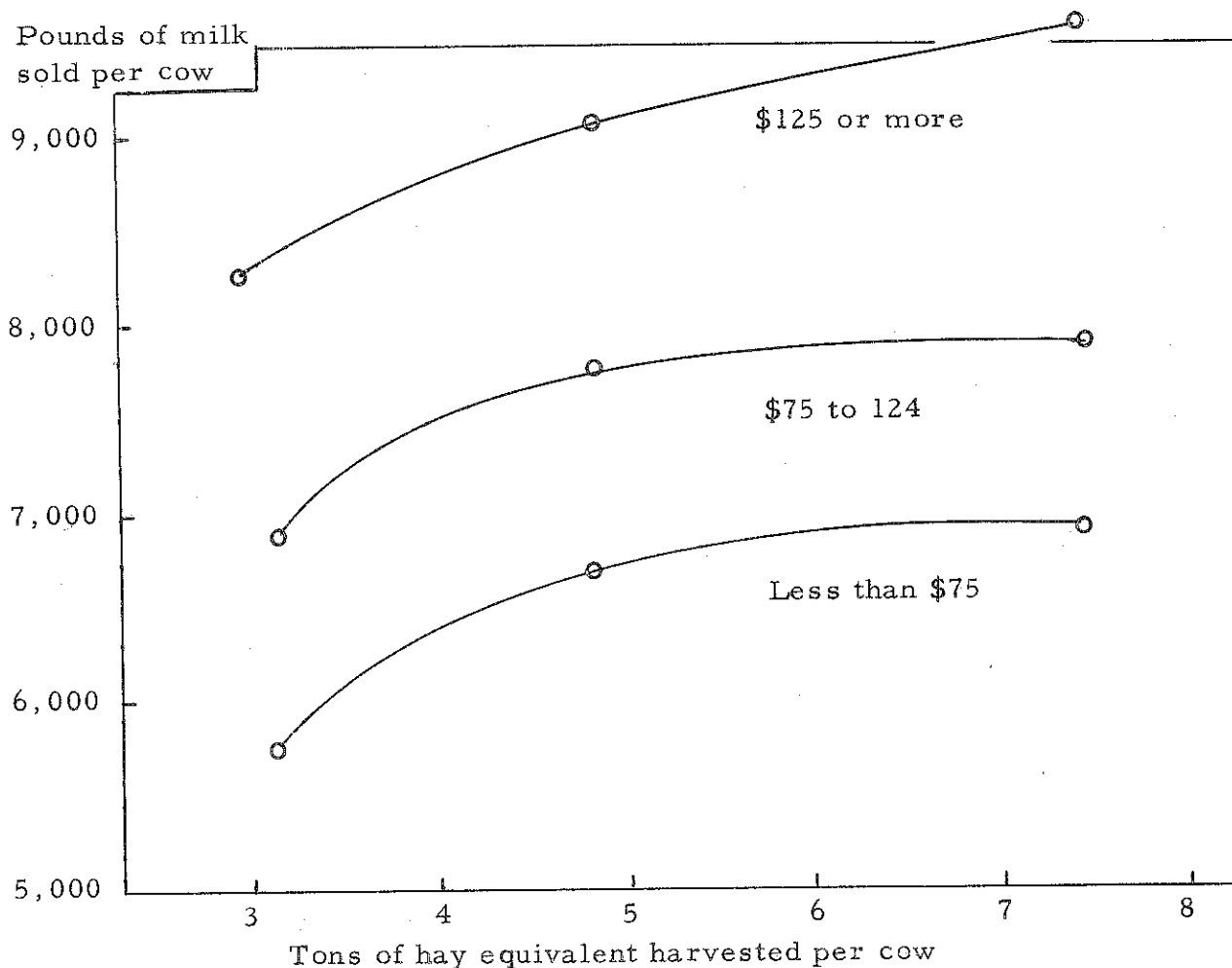
On hill farms, average income went up gradually as feed bought per cow increased. On valley farms, however, the highest income was at about the average level of purchases. Small size of herd limited income at the highest level of feed bought.

Hay equivalent and feed bought. To study the interplay of these two important factors - hay equivalent and feed bought - on milk per cow, the groups of farms with different levels of feed bought per cow were sorted by the amount of hay equivalent harvested per cow.

On both hill and valley farms, the lowest production was on farms with the least roughage and smallest amounts of feed bought per cow. The highest average amount of milk per cow resulted from the combination of high purchased feed per cow and large hay equivalent per cow:

<u>Feed bought per cow</u>	<u>Tons of H. E. per cow</u>		
	<u>under 4.0</u>	<u>4.0 to 5.9</u>	<u>6.0 or more</u>
	<u>milk per cow - hill farms</u>		
Less than \$75	5,810	6,720	6,940
75 to 124	6,910	7,800	7,900
125 or more	8,320	9,110	9,620
	<u>milk per cow - valley farms</u>		
Less than \$60	6,040	6,860	7,750
60 to 99	7,030	7,900	8,560
100 or more	7,770	8,880	8,940

The relationship of these two practices to milk per cow on hill farms is shown graphically in the accompanying chart. Each row of figures in the table was plotted as a line in the chart. Here it can be seen that at each level of feed bought per cow, increasing the roughage per cow raised the milk flow, but going from 3 tons to 5 tons gave a much greater response in milk per cow than going from 5 tons on up to 7 tons per cow.



Relation of Amount of Roughage per Cow to Milk Sold per Cow With Different Levels of Feed Bought per Cow on Hill Farms

However, incomes did not follow this pattern consistently. True, the groups of farms with the least roughage and the smallest amounts of feed bought per cow did make the lowest incomes. Also, at each level of feed bought, incomes went up as roughage per cow was increased from 3 tons to 5 tons. But the increase in roughage from 5 tons to 7 tons gave a varied response in income, despite the increase in milk:

Feed bought per cow	Tons of H. E. per cow		
	Under 4.0	4.0 to 5.9	6.0 or more

labor income - hill farms			
Less than \$75	\$ 850	\$1,830	\$1,150
75 to 124	1,540	1,890	2,070
125 or more	1,460	2,400	1,950

labor income - valley farms			
Less than \$60	\$ 190	\$1,590	\$3,780
60 to 99	2,230	3,220	3,360
100 or more	1,490	3,230	3,180

One group of farms - those in the valleys with low feed bought and high roughage - had a relatively good income. But two other groups - those on the hills with low feed bought and high roughage and those with high feed bought and high roughage - failed to make increased incomes. The remaining groups with high roughage simply showed no significant change in income compared with the groups with average roughage.

Likewise, at each level of roughage per cow, incomes generally failed to go up as feed bought per cow went from average to high.

Differences in other factors that affect income, particularly size of herd, serve to explain much of the failure of income to rise as roughage and feed bought were increased to the highest levels. Apparently, the costs of growing, harvesting and storing large amounts of roughage per cow were excessive on some farms.

Feed Lessons from the Survey

The amounts of roughage harvested and feed bought accounted for much of the wide difference in the rates of milk production per cow.

More roughage per cow meant more milk per cow, up to at least the 6.0 to 6.9 tons range.

Farms with combinations of hay and silages made more milk per cow than farms with hay as the sole roughage, largely because of their having more hay equivalent per cow.

Within the experiences of these farmers the earlier the hay harvest, the larger the hay equivalent harvested per cow and the higher the amount of milk per cow.

As feed bought per cow went up, milk per cow rose strikingly.

The response in milk per cow was stronger and more consistent from increased purchases of feed per cow than from larger amounts of hay equivalent harvested per cow.

The combination of high feed bought and large hay equivalent per cow gave the highest rate of milk per cow, but incomes were limited by other factors and costs of roughage production.

Yours truly,



L. C. Cunningham
Extension Economist

COOPERATIVE EXTENSION WORK IN AGRICULTURE
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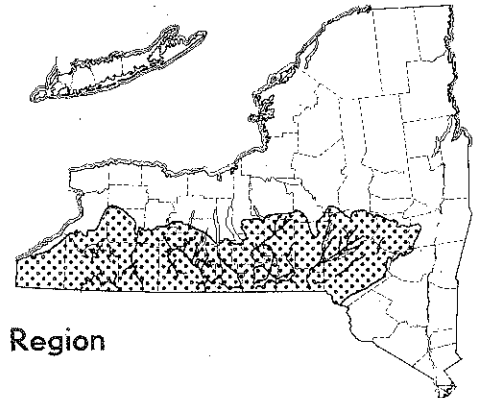
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Dairy Farming



in the



Plateau Region

Letter No. 9

February 16, 1960

To Farmers Visited on
Farm Management Survey:

A wide range in number of cows kept by individual farmers is shown in the survey of dairy farms in the Plateau region. This letter reports the relation of size of herd to other farm characteristics, including amount of cropland, crop yields, rate of milk production, labor force, and investment. Also reported is the relation of size of herd to income, overall and with different levels of crop yields and milk per cow.

Perhaps the most important question confronting dairymen for the sixties is 'what size of herd?' Much more can be learned from the systematic study of groups of farmers' experiences with this problem than from reading about an individual case or two.

The records of hill farms and valley farms were sorted into groups by number of cows and the associated factors and incomes were tabulated. There were only 3 hill farms and 3 valley farms with 100 or more cows in the entire sample of farms so they were not included in this analysis.

Relation of Size of Herd to:

Crop acres. The larger the herd, the larger the acreage of crops per farm, of course. On valley farms, the amount of cropland was nearly 3.0 acres per cow in all size-of-herd groups, except for the smallest-herd group:

	Cows per farm	Crop acres per farm	Crop acres per cow
Range	Average		

		<u>hill farms</u>	
6 to 9	8	49	6.4
10 to 19	15	60	3.9
20 to 29	24	81	3.4
30 to 39	33	98	2.9
40 to 49	43	117	2.7
50 to 99	59	150	2.5

		<u>valley farms</u>	
6 to 9	8	33	4.1
10 to 19	14	43	3.0
20 to 29	24	70	2.9
30 to 39	34	92	2.7
40 to 49	43	127	2.9
50 to 99	58	160	2.8

But on hill farms where cropland is generally considered to be more readily available, additions to cropland did not keep pace with increases in herd size. The hill farms with large herds were stocked more heavily in relation to the cropland than were those with small herds. The farms with 50 to 99 cows had on the average only 2.5 acres of crops per cow.

This relationship of cows to cropland had an important bearing on crop yields and roughage supplies.

Crop yields and amount of roughage.

On both hill and valley farms, crop yields went up with size of herd. They were roughly 20 percent higher on the large farms than on the small farms. The relationship was closer and more consistent on hill farms, largely because of the heavier stocking of the farms with large herds:

Cows per farm	Crop yield index	Tons H. E. harvested per cow
<u>hill farms</u>		
6 to 9	74	7.1
10 to 19	94	5.6
20 to 29	97	5.1
30 to 39	101	4.8
40 to 49	101	4.6
50 to 99	111	4.9
<u>valley farms</u>		
6 to 9	102	6.3
10 to 19	98	4.6
20 to 29	111	5.1
30 to 39	123	5.1
40 to 49	114	5.6
50 to 99	123	5.5

Despite the higher crop yields, the tonnage of hay equivalent harvested per cow on hill farms went down as size of herd increased, except for the largest-herd group. On valley farms, exclusive of the smallest-herd group, the tonnage of roughage per cow went up with size of herd.

Obviously, the amount of milk per cow was affected by these differences in roughage supplies.

Milk per cow. On hill farms, the amount of milk sold per cow was not quite as high in the large herds as in the medium-size herds, even though the amount of feed bought per cow was as large.

But on valley farms, milk per cow rose as size of herd increased and was much higher in the two groups of largest herds. The group of herds in the range from 50 to 99 cows (average 58) had milk sales of 9,260 pounds per cow:

Cows per farm	Feed bought per cow	Lbs. milk sold per cow
<u>hill farms</u>		
6 to 9	\$88	6,920
10 to 19	84	7,220
20 to 29	91	7,560
30 to 39	94	7,720
40 to 49	94	7,610
50 to 99	95	7,500
<u>valley farms</u>		
6 to 9	\$79	7,330
10 to 19	80	7,160
20 to 29	88	7,790
30 to 39	85	7,840
40 to 49	91	8,820
50 to 99	84	9,260

Labor force. The labor force, in terms of man equivalent, was a little more than one man on the farms with small herds. In the group of largest herds, the man equivalent averaged slightly larger than two and one-half men. The large herds were run by somewhat younger men than were the small herds, particularly in the valleys:

Cows per farm	Man equivalent	Age of operator
	<u>hill farms</u>	
6 to 9	1.2	66
10 to 19	1.3	54
20 to 29	1.5	46
30 to 39	1.8	45
40 to 49	2.1	48
50 to 99	2.6	49
	<u>valley farms</u>	
6 to 9	1.1	64
10 to 19	1.2	57
20 to 29	1.5	46
30 to 39	1.7	47
40 to 49	2.1	40
50 to 99	2.6	43

Labor efficiency measured by the number of cows per man was nearly twice as high, on the average, in the large herds as in the small herds. In the large herds, 22 cows per man was the standard.

Only about 50,000 pounds of milk per man was sold from the farms with small herds. With large herds (50 to 99 cows), however, nearly 180,000 pounds per man was sold from hill farms, and about 220,000 pounds per man from valley farms:

Cows per farm	Cows per man	Thous. lbs. milk sold per man
		<u>hill farms</u>
6 to 9	6	52
10 to 19	12	89
20 to 29	16	127
30 to 39	19	158
40 to 49	20	163
50 to 99	22	179
		<u>valley farms</u>
6 to 9	8	56
10 to 19	12	86
20 to 29	16	136
30 to 39	20	162
40 to 49	21	202
50 to 99	22	219

High labor efficiency is one of the big advantages of large farm businesses over small ones.

Total investment. The total investment per farm in land and buildings, livestock, power and machinery, and supplies increased, of course, as size of herd increased. But the investment was about the same per cow in large herds as in small herds, except for the 6- to 9-cow farms. The large farms, however, had more modern buildings and more up-to-date equipment generally than did the small farms.

On the largest farms, the total investment averaged about \$66,000 per farm and \$1,100 per cow on hill farms and \$75,000 per farm and \$1,300 per cow on valley farms. The difference in total investment on a per-cow basis between hill and valley farms is somewhat less than is

generally thought to be the case. Real estate makes up, of course, a smaller proportion of total investment in present-day farming than formerly:

Cows per farm	<u>Total investment</u>	
	per farm	per cow
	<u>hill farms</u>	
6 to 9	\$14,850	\$1,930
10 to 19	21,410	1,380
20 to 29	27,650	1,170
30 to 39	39,290	1,170
40 to 49	47,040	1,090
50 to 99	65,880	1,120
	<u>valley farms</u>	
6 to 9	\$12,000	\$1,470
10 to 19	20,220	1,410
20 to 29	31,940	1,330
30 to 39	46,100	1,360
40 to 49	54,690	1,260
50 to 99	74,960	1,300

Power and machinery investment.

The investment in power and machinery showed a similar change:

Cows per farm	<u>P. & M. investment</u>	
	per farm	per cow
	<u>hill farms</u>	
6 to 9	\$2,100	\$262
10 to 19	4,140	276
20 to 29	6,000	250
30 to 39	8,450	256
40 to 49	10,880	253
50 to 99	15,280	259
	<u>valley farms</u>	
6 to 9	\$1,180	\$147
10 to 19	3,320	237
20 to 29	6,360	265
30 to 39	8,840	260
40 to 49	10,230	238
50 to 99	15,950	275

The investment per farm went up as the size of herd increased. Despite more mechanization on the farms with larger herds, the investment per cow was about the same in large and small herds.

Power and machinery expense. The year's operating expenses for power and machinery per farm, including such items as gasoline and oil, repairs, depreciation, interest and machine hire, went up, of course, as size of herd increased. But, per cow, the expense tended to be less in large herds than in small herds. About \$100 per cow was spent for these items in the large herds:

Cows per farm	<u>P. & M. expense</u>	
	per farm	per cow
	<u>hill farms</u>	
6 to 9	\$1,020	\$127
10 to 19	1,860	124
20 to 29	2,540	106
30 to 39	3,300	100
40 to 49	4,000	93
50 to 99	5,720	97
	<u>valley farms</u>	
6 to 9	\$ 760	\$ 95
10 to 19	1,580	113
20 to 29	2,640	110
30 to 39	3,370	99
40 to 49	4,560	106
50 to 99	5,340	92

Labor income. Large herds returned higher average labor incomes than did small herds. The relationship of size to income was similar on both hill and valley farms up to herds of about 40 cows. On hill farms, incomes increased as size exceeded 40 cows, but the increases were moderate.

On valley farms, incomes rose even more rapidly in the higher ranges of size than in the lower ranges. This was in part because of the high rates of milk production in these large herds, as described earlier:

Cows per farm	Average labor income	% of farms with:	
		\$-1,000 or lower income	\$5,000 or more income

hill farms			
6 to 9	\$ -130	8	0
10 to 19	740	15	1
20 to 29	1,600	9	7
30 to 39	2,360	10	18
40 to 49	3,090	12	28
50 to 99	3,280	10	18

valley farms			
6 to 9	\$ 600	0	0
10 to 19	650	13	0
20 to 29	1,720	13	9
30 to 39	2,790	11	16
40 to 49	5,370	8	42
50 to 99	7,440	0	57

The chances of making a good income, \$5,000 or more, were non-existent with small herds. With large herds on valley farms, more than half of them made at least \$5,000.

Income, with different crop yields.

On farms with low crop yields, increasing the size of herd raised incomes moderately. But with high crop yields, additional cows paid much better, especially on valley farms. The valley farms with low crop yields and small herds made, on the average, only about \$500; those with high crop yields and large herds made nearly \$6,000:

Cows per farm	Crop yield index		
	low	medium	high
<u>labor income-hill farms</u>			
6 to 19	\$ 250	\$ 780	\$ 910
20 to 39	1,280	1,840	2,450
40 to 99	870	2,680	4,730

labor income-valley farms			
6 to 19	\$ 420	\$ 430	\$1,220
20 to 39	1,700	1,910	2,500
40 to 99	*	6,890	5,970

* only 3 farms

Income, with different rates of milk per cow. Farms with low-producing cows (less than 6,000 pounds per cow) had losses regardless of size of herd, although losses on hill farms were reduced some as size of herd increased. But with high-producing cows, incomes rose rapidly as more cows were kept. There was a difference on valley farms of about \$8,000 between the average labor income of the small herds of poor cows and that of the large herds of good cows:

Cows per farm	Pounds of milk per cow		
	Less than 6,000	6,000 to 8,999	9,000 or more

labor income-hill farms			
6 to 19	\$ -610	\$ 990	\$1,610
20 to 39	-290	1,750	3,530
40 to 99	-210	2,560	6,730

labor income-valley farms			
6 to 19	\$ -720	\$ 730	\$2,190
20 to 39	-690	2,020	4,120
40 to 99	*	4,740	7,540

* only 1 farm

With milk sales per cow in the medium range, an additional cow increased labor income nearly \$50 on hill farms and about \$100 on valley farms.

How Large?

The hill and valley groups of largest herds (about 60 cows) made the highest average labor incomes. Whether still larger herds, say those of 100 cows, would have been even more successful is impossible to determine because of so few of such farms in this study.

Large size of herd paid because of (a) high labor efficiency, (b) spreading investment and expenses, especially for power and machinery, over a large number of units, and (c) selling many units of product at a given margin between prices and costs.

A farm business should be large enough to provide full employment for at least one man and efficient use of one set of machinery.

Most of the gains in the use of labor from size of business alone were apparently attained in the 50- and 60-cow herds. Most major pieces of present-day equipment like balers, field choppers, bulk milk tanks, gutter cleaners, and silo unloaders are used to reasonably full capacity in such size of herds. Therefore, it may well be that those individual dairymen who want to run more cows than that should consider another separate farm unit.

Yours truly,



L. C. Cunningham
Extension Economist

COOPERATIVE EXTENSION WORK IN AGRICULTURE
AND HOME ECONOMICS, STATE OF NEW YORK

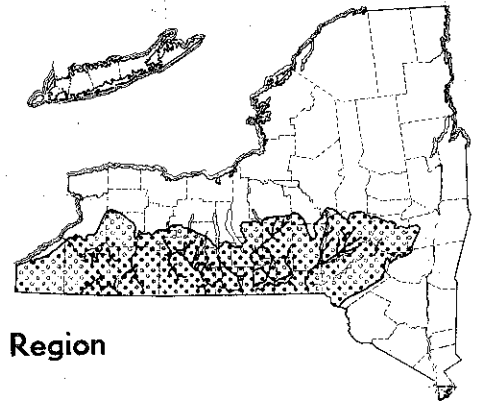
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ITHACA, NEW YORK



Dairy Farming

in the



Plateau Region

Letter No. 10

March 15, 1960

To Farmers Visited on
Farm Management Survey:

Some measures of the use of labor on the Plateau region dairy farms were described in letter number 4. We are now ready in this letter to discuss the relation of them to other farm factors and to income.

Let us look first at the relation of the use of labor, as measured by the number of cows kept per man, to size of herd, milk production per cow and income.

Number of Cows per Man

Size and milk production. On farms where less than 10 cows per man were kept, herds were relatively small. Even with 10 to 14 cows per man, herds averaged only 21 cows per farm on both hill and valley farms. In contrast, herds were about twice as large where there were 20 or more cows per man. It is difficult to make good use of labor in a small herd.

The average amount of milk sold per cow was about the same in all ranges of number of cows per man.

Evidently, additional cows per man were not kept at the expense of the quality of the job done:

Range	Cows per man Average	Cows per farm	Lbs. milk sold per cow
<u>hill farms</u>			
Less than 10	8	13	7,350
10 to 14	12	21	7,400
15 to 19	17	29	7,570
20 to 24	22	35	7,310
25 or more	29	41	7,780
<u>valley farms</u>			
Less than 10	8	11	7,710
10 to 14	12	21	7,360
15 to 19	17	32	8,310
20 to 24	22	33	8,170
25 or more	29	50	7,750

Income. The average labor income increased rapidly with increases in the number of cows cared for per man. On valley farms, for example, the average labor income was about \$4,800 where 25 or more cows were kept per man, as compared with only

about \$300 where there were less than 10 cows per man. The relationship was similar on hill farms.

It was shown in the previous section that as labor efficiency went up size of herd increased. The differences in labor income between the different groups are therefore largely the result of labor efficiency, but partly the result of gains in efficiency of the larger herds in other factors than labor:

Range	Cows per man Average	Number of farms	Average labor income
			<u>hill farms</u>
Less than 10	8	83	\$ -90
10 to 14	12	223	940
15 to 19	17	273	1,790
20 to 24	22	150	2,200
25 or more	29	94	4,160
			<u>valley farms</u>
Less than 10	8	16	\$ 320
10 to 14	12	71	860
15 to 19	17	77	2,940
20 to 24	22	46	3,800
25 or more	29	42	4,820

Amount of Milk Sold per Man

The amount of milk sold per man is a test of labor that takes into account the kind of cows as well as the number kept per man. Let us look next at the relation of this measure to size of herd, milk production, mechanization and income.

Size and milk production. High output per man was obtained on some farms by: (1) having moderately large herds, (2) getting high production per cow,

and (3) producing milk about evenly the year round.

The hill farms that sold 250 thousand pounds or more per man had 42 cows per farm and sold nearly 9,500 pounds of milk per cow. About half of the total milk for the year was sold in the 6 months October to March. Similarly, the valley farms that sold 250 thousand pounds or more of milk per man had 46 cows per farm and sold about 9,900 pounds of milk per cow; milk production was seasonally quite uniform. In both hill and valley groups, the low output-per-man farms had relatively small herds of low-producing cows:

Thous. pounds milk sold per man	Cows per farm	Pounds milk sold per cow	Percent milk sold Oct.-Mar.
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		<u>hill farms</u>	
Less than 50	14	4,860	38
50 to 99	21	6,590	44
100 to 149	28	7,540	47
150 to 199	34	8,460	48
200 to 249	38	9,290	49
250 or more	42	9,480	51

		<u>valley farms</u>	
Less than 50	16	4,490	35
50 to 99	18	6,780	47
100 to 149	30	7,570	48
150 to 199	36	8,630	49
200 to 249	42	9,370	51
250 or more	46	9,890	52

The high-labor-efficiency farms were run by relatively young men. The average ages of the operators with high output per man were 40 years on hill farms and 41 years on

valley farms. With low output per man, the average ages were 62 and 54 years respectively.

Emphasis on milk. As might be expected, the groups of farms with high output of milk per man had a somewhat smaller proportion of other products per man than did the groups of farms with low output of milk per man. For example, on hill farms, milk was only about 60 percent of the product units per man in the group of hill farms with 50 to 99 thousand pounds of milk per man, compared with 75 percent in the group of farms with 200 to 249 thousand pounds per man. A similar relationship - the larger the amount of milk sold per man, the higher the proportion that milk was of total product units - existed on valley farms.

Mechanization. The relation of the output of milk per man to mechanization is of particular interest. Substituting machines for handlabor was an important way to get high output per man on many farms. As might be expected, the average power and machinery expense per man went up rapidly as the amount of milk sold per man increased. In the highest output groups, this item amounted to about \$2,900 per man on hill farms and \$3,400 per man on valley farms, or more than double the expense per man on low output farms. Moderately high expenses for mechanization are necessary if a high level of output per man is attained. Such combinations of output and expense were profitable, as will be shown a little later.

As the output of milk per man increased from group to group, power

and machinery expense per cow declined slightly on hill farms and remained about the same, except for the lowest output group, on valley farms. The high-output farms had more equipment, but the expense per cow was smaller because the herds were larger:

Thous. lbs. milk sold per man	Power and Machinery expense	
	per man	per cow
	<u>hill farms</u>	
Less than 50	\$1,015	\$116
50 to 99	1,421	115
100 to 149	1,762	107
150 to 199	2,120	106
200 to 249	2,375	100
250 or more	2,880	96
	<u>valley farms</u>	
Less than 50	\$1,406	\$123
50 to 99	1,224	102
100 to 149	1,717	103
150 to 199	2,160	108
200 to 249	2,380	102
250 or more	3,373	110

Income. A high output of milk per man is essential for a good income in dairy farming. Since it reflects size of herd and rate of milk production per cow, as well as use of labor, milk sold per man accounts for a great deal of the wide variation in labor incomes of individual farms described in a previous letter.

Losses averaged more than \$1,000 a farm on farms that sold less than 50 thousand pounds of milk per man. Furthermore, farms with 50 to 99 thousand pounds of milk per man returned only meager incomes to their operators. As the outturn of product

per man rose to higher levels, average incomes on both hill and valley farms rose sharply. An average labor income of nearly \$6,300 was made on hill farms and nearly \$7,400 on valley farms that sold 250 thousand pounds or more of milk per man:

Thous. lbs. milk sold per man Average labor income \$-1,000 or lower \$5,000 or more

		hill farms	
Less than 50	\$-1,090	42	0
50 to 99	130	19	0
100 to 149	1,660	6	4
150 to 199	2,840	3	17
200 to 249	5,210	0	47
250 or more	6,290	0	56

		valley farms	
Less than 50	\$-1,030	50	0
50 to 99	240	19	0
100 to 149	1,500	9	6
150 to 199	3,850	5	23
200 to 249	6,650	0	54
250 or more	7,390	0	44

With a low output of milk per man, not only was the average income very low, but the risks of loss were large and the chances of making a good income were nonexistent. On both hill and valley farms, with less than 50 thousand pounds of milk per man, about half of the farms had losses of at least \$1,000 and none of them made as much as \$5,000.

With a large outturn of product per man, not only was the average labor income high, but the risks of large loss were nil and the chances of making a good income were favorable. For example, with 250 thousand

pounds of milk sold per man, none of the farms had serious losses and about half of them made \$5,000 or more.

The relation of output per man to income was equally strong when measured by milk per man or product units per man. Evidently, high output per man was the payoff, whether milk accounted for 60 or 80 percent of the total.

In summary, the amount of milk sold per man was a key factor for financial success in dairy farming during the year of the study in this region. It is expected to continue so in the future.

Yours truly,

L. C. Cunningham

L. C. Cunningham
Extension Economist

COOPERATIVE EXTENSION WORK IN AGRICULTURE
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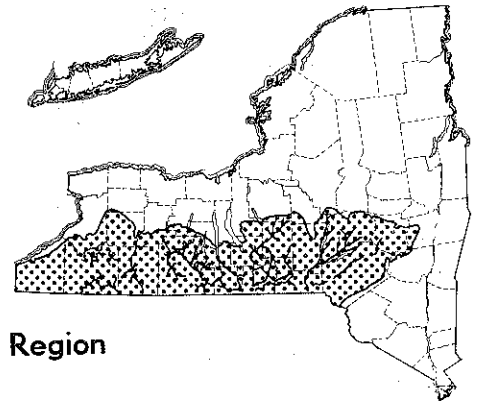
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ITHACA, NEW YORK

Dairy Farming



in the



Plateau Region

Letter No. 11

May 26, 1960

To Farmers Visited on
Farm Management Survey:

From the study of the experiences of the 1,075 dairy farmers in the Plateau region several goals have been developed toward which farmers may work in the future. Some dairymen have already attained one or more of these goals, but only a very few have reached all ten of them. Such goals can give balance to your farming efforts and help to avoid riding a particular hobby.

1. Keep 50 or more milk cows. The averages were 27 cows per farm on the hill farms and 31 cows on the valley farms. More than half of the farms had fewer than 30 cows. To the operators of such farms, a goal of 50 milkers may look pretty high. At the time of the study, 6 percent of the hill farms and 10 percent of the valley farms had at least 50 cows.

This goal is set with the conviction that the farm business should be large enough to provide: a) full-time work for at least one man, and b) economic use for one set of power and machinery.

At present, this means not 20 cows nor 200, but in the neighborhood of 50 milkers in this region. Our ideas about size of herd have changed over the years, of course, and will continue to change as mechanization in dairy farming increases.

2. Improve and maintain about 3 crop acres per cow. By cropland we mean the acres harvested by man. Obviously this figure is strongly affected by the productivity of the cropland and by the amount and quality of pasture. Wide variations in both directions from the 3-acre goal were found on different farms. Land is not always available at the time or in the amounts needed for the size of herd that is to be kept. The area of cropland must be large enough to supply ample roughage for the herd. On the other hand, the expense for liming, fertilizing and seeding a new meadow frequently amounts to as much as \$40 per acre. Hence, the advisability of improving just the optimum amount of cropland per cow.

3. Obtain above-average crop yields per acre, i. e., 2.5 tons of hay, 14 tons of corn silage, 75 bushels of oats. In general, the aim is for yields about 50 percent above the average of the region. Crop yields were found to be somewhat higher on the valley soils than on the hill soils.

These crop yield goals were attained on more than 10 percent of the farms. Intensity of stocking the cropland with cattle, liberal use of commercial fertilizer, fairly frequent reseeding of hay meadows, and selection of varieties and hybrids best suited to particular field locations were all important practices on those farms.

4. Harvest at least 6 tons of hay equivalent per milk cow. Although quantity is emphasized in this goal, quality of the forage is of equal importance. This goal is easier to attain if both hay and corn silage are produced, rather than hay alone. The regional average was actually 5.0 tons of hay and silages (hay equivalent) harvested per cow, so the goal calls for one additional ton of forage over the average.

This figure of 6 tons needs to be carefully interpreted: a) the amount covers the feed for the heifers as well as the milk cows, and is based on the usual ratio of one heifer for each 2 cows, b) if more than the usual supplemental feeding of roughage on pasture is practiced, the 6-ton figure should be raised, c) if losses in storage are excessive, the goal should be increased, d) the yellow breeds of cows take less forage than black and white cows, and e) any

carryover or sale of roughage needs to be taken into account.

5. Sell 10,000 pounds or more of milk per cow. On hill farms, the average amount of milk sold per cow was 7,600 pounds, with 22 percent of the farms under 6,000 pounds per cow. On valley farms, the average was 8,100 pounds, with 14 percent under 6,000 pounds. One hill farm in 10 and one valley farm in 8 had attained this goal at the time of the survey. The amounts of feed bought per cow and of hay equivalent harvested per cow both played a big part in reaching the goal on these farms. Two important points to remember are: a) this is milk sold, not produced, and b) milk is on a 3.7 percent butterfat basis.

6. Produce 50 percent of the year's milk during 6 months, October to March. The aim here is about even milk production the year-round. Such a seasonal pattern of production not only meets fluid milk market requirements, but also makes good use of labor on the farm. True, the cost of producing 100 pounds of milk is less in the summer than in the winter, but year-round production is more economical, and the year's price is higher.

7. Spend not more than 20 percent of the year's milk sales for feed bought. Feed bought amounted to 28 percent of milk sales on hill farms and to 24 percent on valley farms. About one-fourth of the grain fed to cows was home-produced. Admittedly this is a difficult goal to attain, but some farmers in the region did reach it. Their secret was an abundance of roughage - the fourth goal. Feed

bought referred to here includes mixed feeds and hay, if any, for dairy cattle.

8. Sell 250,000 pounds or more of milk per man. This is perhaps the most important single goal. The averages for hill and valley farms were 125,000 and 145,000 pounds per man, respectively. One-third of the hill farms had under 100,000 pounds per man. In the year of the study, 1957-58, one farm in 20 reached the goal, not necessarily by working long hours, but by having good-sized herds, moderately high-producing cows and more than the usual amount of labor-saving power and machinery. Someone might say "give me the money for equipment and I can easily make that goal". So what about goals for mechanization?

9. Keep investment in power and machinery under \$350 per cow. The average investment in these items on both hill and valley farms was about \$250 per milk cow. The values here relate to current depreciated values, not the cost new. In 1957-58 most all farms had milking machines, manure spreaders, milk coolers, tractors, and balers. Several farms had gutter cleaners, field choppers, hay dryers, and hay conditioners. Only a few farms had bulk milk tanks, silo unloaders, pipeline milkers and similar newer items. This goal will go up, of course, as more and more farms get these newer things.

10. Keep annual expense for power and machinery under \$125 per cow. To obtain high output per man it is necessary to have machines to work

with. Therefore, the goal of \$125 per cow is actually higher than the average expense of approximately \$100 per cow for all farms. However, it is important not to go overboard in this mechanization business. For instance, some of the farms in the study had as much as \$200 per cow of expense in this phase of their operations. Included in these power and machinery expenses are: depreciation, interest on investment, repairs, gasoline and oil, hired milk hauling, machine hire, farm share of auto, and electricity. Credits include gas tax refunds and machine income from custom work. The figure of \$125 can serve as a guide to an individual in judging his own situation. Because of the trend to more mechanization, the present goal is subject to revision upward.

The Innovators


In establishing these goals for the rank and file of dairymen, we recognize that there are individual operators who exceed one or more of the goals by a wide margin. For example, six farms in the study had 100 cows or more. One dairyman sold 14,000 pounds of milk per cow. More than 400,000 pounds of milk was sold per man on 2 other farms. Still another farm with an almost complete line of power and machinery had an investment in these items in excess of \$500 per cow, even in a 70-cow herd. These aggressive farmers we call "innovators". They have pushed some frontiers of farm operation into new high ground. Their innovations are interesting to watch, and they add to our knowledge of dairy farming. Further testing of these new experiences is necessary,

however, to tell which ones are novelties and which are profitable practices. Until then, such performances need not be considered by dairymen generally as useful goals.

Check List of Goals

Below is a list of these goals. You are urged to check the ones you have already reached, and proceed with the development of plans to attain the others in the years ahead.

Yours truly,


L. C. Cunningham
Extension Economist

GOALS FOR DAIRYMEN
Plateau region, New York

- 1. Keep 50 or more milk cows.
- 2. Improve and maintain about 3 crop acres per cow.
- 3. Obtain above-average crop yields per acre, i. e., 2.5 tons of hay, 14 tons of corn silage, 75 bushels of oats.
- 4. Harvest at least 6 tons of hay equivalent per cow.
- 5. Sell 10,000 pounds or more of milk per cow.
- 6. Produce 50 percent of year's milk during the 6 months, October to March.
- 7. Spend not more than 20 percent of the year's milk sales for feed bought.
- 8. Sell 250,000 pounds or more of milk per man.
- 9. Hold investment in power and machinery under \$350 per cow.
- 10. Keep annual expense for power and machinery under \$125 per cow.

COOPERATIVE EXTENSION WORK IN AGRICULTURE
AND HOME ECONOMICS, STATE OF NEW YORK

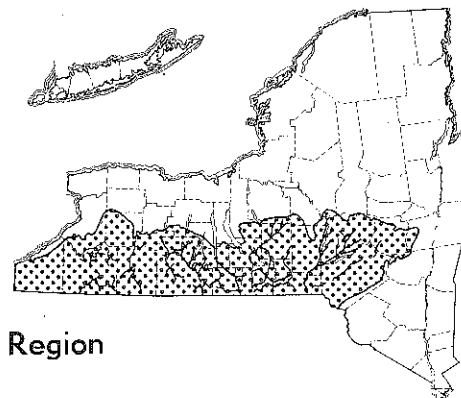
N. Y. STATE COLLEGE OF AGRICULTURE
U. S. DEPARTMENT OF AGRICULTURE
COOPERATING

EXTENSION SERVICE
AGRICULTURAL ECONOMICS
ITHACA, NEW YORK

Dairy Farming



in the



Plateau Region

Letter No. 12

June 15, 1960

To Farmers Visited on
Farm Management Survey:

Studies similar to that for the Plateau region have been made in other regions of New York. This letter reports some comparisons of the dairy farms in these regions.

Surveys were made of random samples of commercial dairy farms as follows: 371 farms in the Central Plain region for 1953-54, 556 farms in the North Country region for 1955-56, 823 hill farms and 252 valley farms in the Plateau region for 1957-58 (see map).

Milk Prices and Labor Incomes

Since these regional studies were made for different periods, changes in milk prices need to be taken into account when income comparisons are made. For 1953-54, the New York State average farm price of milk was \$4.30 per 100 pounds. The average price received by Central Plain dairy-men was 10 cents higher, because some of them sold to upstate markets. From 1953-54 to 1955-56 the level of milk prices declined 17 cents. Owing to their long distance to market and their high proportion of summer milk,

North Country dairymen received \$3.92 - 21 cents less than the State average price. By 1957-58, New York State milk prices had risen to \$4.60; the price received by Plateau region farmers was about the same as this State average price.

Because of these differences in milk prices as well as differences in land resources and how the farms were organized, average labor incomes were not the same in all regions. The 1953, 1955 and 1957 crop seasons were all reasonably normal. The labor incomes were \$890 in the North Country and \$3,140 in the Central Plain. Plateau farm incomes were in between those of the other regions. Valley farms made about \$800 more than did hill farms in the Plateau region:

Region	Price per cwt. Average Survey N. Y. S. labor farms farms income		
Plateau-hill	\$4.58	\$4.60	\$1,700
-valley	4.62	4.60	2,660
North Country	3.92	4.13	890
Central Plain	4.40	4.30	3,140

Some farms lost money and others made good incomes in each of the regions. Losses in excess of \$2,000 were incurred on 2 to 5 percent of the farms in all areas. From an eighth to a third of the farms failed to break even. That is, receipts were not enough to meet farm expenses and interest on capital, let alone any return for the operator's labor except farm privileges. In sharp contrast, labor incomes of \$4,000 or more were made by 5 percent of the North Country farms, by 16 percent of the hill farms and 30 percent of the valley farms in the Plateau, and by 32 percent of the farms in the Central Plain. Furthermore, a small proportion of the farms made as much as \$8,000 labor income in all areas except the North Country:

Labor income (thous.)	Percent of farms			
	Plateau Hill	North Valley	Central Country	Plain
\$-2 or less	5	4	4	2
-2 to 0	20	17	27	10
0 to 2	36	28	46	26
2 to 4	23	21	18	30
4 to 6	9	17	4	16
6 to 8	4	7	1	9
8 or more	3	6	0	7
Total	100	100	100	100

Prices Paid and Unit Costs

The index of prices paid by New York dairy farmers was 346 (index, 1910-14 = 100) in 1953-54. In the Central Plain region that year, the average cost of producing 100 pounds of milk was \$4.59. With prices paid at about the same level in 1955-56, the average cost in the North Country was

\$4.45. This figure is a reflection of the relatively extensive nature of dairy farming in this region. By 1957-58, prices paid had risen 6 percent. In that year hill farms in the Plateau had an average cost of \$4.94 and valley farms \$4.50. The 44 cents difference between the two groups of farms in this region is largely a matter of difference in land resources and resulting farm operation:

Region	Prices paid by N. Y. farmers 1910-14 = 100	
	Average cost per cwt.	
Plateau-hill	367	\$4.94
-valley	367	4.50
North Country	345	4.45
Central Plain	346	4.59

The average size of labor force, measured in man equivalent, was similar in all regions, but was somewhat larger in the Central Plain:

Region	Average M. E. per farm
Plateau-hill	1.6
-valley	1.7
North Country	1.7
Central Plain	1.9

The proportion of strictly one-man farms was about the same in all regions, but the Central Plain had a higher percentage of farms with a labor force of 3 or 4 men than did the other regions. Even there, however, only 4 percent of the farms had a labor force larger than 4.0 men:

Man equiv. per farm	Percent of farms			
	Plateau Hill Valley	North Country	Central Plain	
1.0	13	16	14	13
1.1 to 2.0	68	62	54	39
2.1 to 3.0	17	18	28	35
3.1 to 4.0	2	2	3	9
4.1 or more	0	2	1	4
Total	100	100	100	100

Valley farms ranked highest in average amount of milk sold per man - 145,000 pounds. Although easily understood, such a measure of the use of labor is less inclusive than product units per man. A product unit is 7,000 pounds of milk or the equivalent of other farm products. Valley farms led by this measure also; Central Plain farms ranked well because of their larger crop production:

Region	Thous. lbs. milk per man	Product units per man
Plateau-hill	125	26
-valley	145	29
North Country	109	22
Central Plain	93	24

Being a sort of composite measure of size, rates of production and labor efficiency, differences in product units per man accounted for much of the wide variation in incomes in each region. With low output per man, less than 20 product units, average incomes in all regions were comparatively low. As output increased,

incomes rose consistently in all regions. Increases in labor incomes from increased labor efficiency were found to be greatest in the Central Plain and next highest on valley farms in the Plateau region, both regions of comparatively favorable land resources.

Size of Herd

The hill farm group in the Plateau region and the North Country had the same average size of herds - 27 cows. The valley farm herds in the Plateau region were the largest and the Central Plain herds were the smallest:

Region	Milk cows per farm
Plateau-hill	27
-valley	31
North Country	27
Central Plain	22

The Central Plain survey was made 4 years earlier than the Plateau study, so shifts in herd size have probably narrowed the difference.

There were relatively more small herds in the Central Plain than in the other regions. In fact, 4 farms out of 5 in the Central Plain had fewer than 30 cows. Other farm enterprises added to the size of business on these farms with small herds. In the other regions 2 farms out of 3 had herds of fewer than 30 cows. At the other extreme in herd size, one farm in 20 had 50 or more cows, except on the

valley farms where one in about 10 was that large:

Number of cows per farm	<u>Percent of farms</u>			
	Plateau Hill	North Valley	Central Country	Plain
6 to 9	3	2	2	9
10 to 19	28	22	23	39
20 to 29	34	33	39	33
30 to 39	21	23	23	12
40 to 49	9	11	8	5
50 to 99	5	9	5	2
Total	100	100	100	100

The relation of number of cows per farm to average labor income was positive in all regions, but it was significantly stronger in the Central Plain and for the valley group in the Plateau than in the North Country and for the hill group in the Plateau.

Cropland

The amount of cropland per farm was about 85 acres in the Plateau and North Country regions and 125 acres in the Central Plain. On a per-cow basis, the latter region had, of course, much more cropland, 5.6 crop acres, than did the other areas. As might be expected, the valley farms were stocked with cattle more intensively than were the farms in the other regions:

Region	<u>Acres of cropland per farm per cow</u>	
Plateau-hill	85	3.1
-valley	86	2.8
North Country	89	3.3
Central Plain	125	5.6

Hay and Total Roughage

Seventy-five percent of the cropland on North Country farms was in hay, compared with only 30 percent on the Central Plain farms. The amount of hay and silages, on a hay equivalent basis, harvested per cow was about 5.0 tons in the Plateau region. Roughage supplies per cow were much larger in the Central Plain than in the other areas, particularly in the North Country:

Region	Percent of cropland in hay	Tons of H. E. harv. per cow
Plateau-hill	63	5.0
-valley	57	5.1
North Country	75	4.6
Central Plain	30	5.8

Although the average amount of hay equivalent harvested per cow differed among regions, the response in milk per cow to increased roughage per cow was similar. With a limited amount of roughage per cow, the rate of milk flow was relatively low; with moderate to large amounts, the rate was comparatively high. It was true, however, that amounts of roughage in excess of about 6 tons per cow did not give corresponding increases in milk. This is explained, in part at least, by the fact that the amount of purchased feed per cow was lower in such situations.

Homegrown and Purchased Feed

Nearly 3,000 pounds of concentrates were fed per cow in the Plateau

and Central Plain regions, but considerably less than this in the North Country. Grain production is much more important on Central Plain farms than in other regions, especially in the North Country where only 17 percent of all grain and other concentrates fed to cows was homegrown. Feed bought for dairy cattle was equal to about one-fourth of the year's milk sales in all regions, except the Central Plain where homegrown feed production was relatively large.

Milk per Cow

The average rate of milk production was lowest in the North Country and highest for the valley group in the Plateau and in the Central Plain:

Region	Pounds of milk sold per cow
Plateau-hill	7,570
-valley	8,080
North Country	6,550
Central Plain	8,050

Some low-producing herds and some high-producing herds were found in all regions, but the proportions did vary. In the North Country for example, 38 percent of the herds were under 6,000 pounds per cow, but in the valley group in the Plateau and in the Central Plain only 14 percent of the herds had such low production. On the high side, 16 percent of the valley farms and 14 percent of the Central Plain farms sold 10,000 pounds or more of milk per cow.

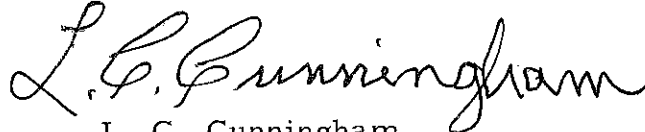
The amount of milk sold per cow was directly related to labor income in all regions. Good cows paid better than poor cows everywhere. The relationship was most striking, however, for the valley farms in the Plateau region. Here, low-production farms lost the most; high-production farms made the largest incomes.

Summary

There are similarities and differences of economic significance between these dairy regions. They exist not only in the average situations but also in the relationships found between farm management factors and labor incomes. The most striking feature is the wide variation in incomes of individual farms within each region. Well-organized farms made good incomes, but the better the land resource, the greater the returns.

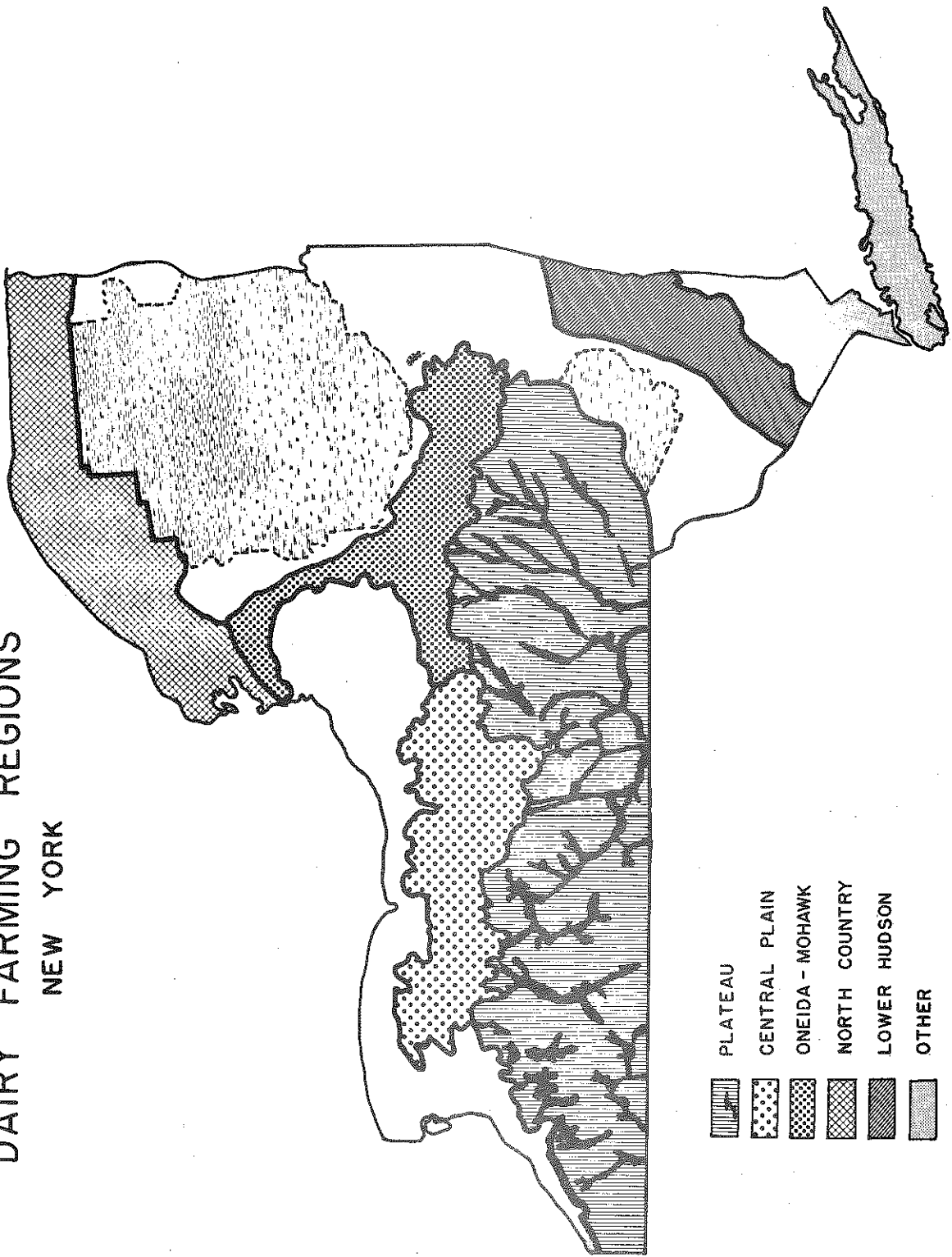
This is the final letter of the series about results of the Plateau region study. Thanks again to all of you who provided the data on your farming operations. Without your cooperation such a study would not have been possible. As the study of still another dairy region, Oneida-Mohawk, is begun I wish each one of you success in your farming operations.

Sincerely yours,



L. C. Cunningham
Extension Economist

DAIRY FARMING REGIONS
NEW YORK



- PLATEAU
- CENTRAL PLAIN
- ONEIDA - MOHAWK
- NORTH COUNTRY
- LOWER HUDSON
- OTHER