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**MANAGEMENT STUDY OF DAIRY FARMS
BY
ACRES CORN GROWN FOR GRAIN
NEW YORK, 1978**

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Foreward

This publication is part of a research project supported by a temporary grant to the Agricultural Experiment Station at Cornell University by Agway Inc. of Syracuse, New York.

The crop and animal practices used by dairy farmers affect their farm incomes. Growing corn for grain is a crop practice that has been changing in recent years. Data available from the farm business management records in the Department of Agricultural Economics at Cornell University were used to study the effects of growing corn for grain on the incomes of dairy farmers for the year 1978.

This report is an update and elaboration of previous studies done for the years 1973 and 1974. The statistical work on the 1978 data was done by James Lamkey an undergraduate student in the College of Agriculture and Life Sciences at Cornell University. The typing was done by Mary Chaffee.

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Introduction

Feed is the largest single cost item on a dairy farm. On the Cost Account Farms for 1978, all feed including roughage accounted for 48 percent of the cost of producing milk. On the Farm Business Management Farms in 1978, purchased feed accounted for 34 percent of the total cash expenses. It is for this reason that dairymen always watch for changes that affect their feed costs.

Dairy feed prices were relatively stable during the 1960's but rose sharply in the 1970's. Good managers look for the best ways to cope with these higher feed prices. Feed costs on dairy farms are affected by numerous things. The roughages and grains grown on the farm are two important items to be considered.

With the rise in dairy feed prices, farmers and individuals working with dairymen often ask about the economic feasibility of growing corn for grain on New York dairy farms as a way of keeping feed costs under control. As a result of these concerns, the dairy farm business records have been studied from time to time to find what the experience of these farmers has been. A study of the 1973 records was reported in A.E. Res. 74-19 and the 1974 records with comparisons was reported in A.E. Res. 76-3. Highlights from the 1978 records are included in this publication.

Study Procedures

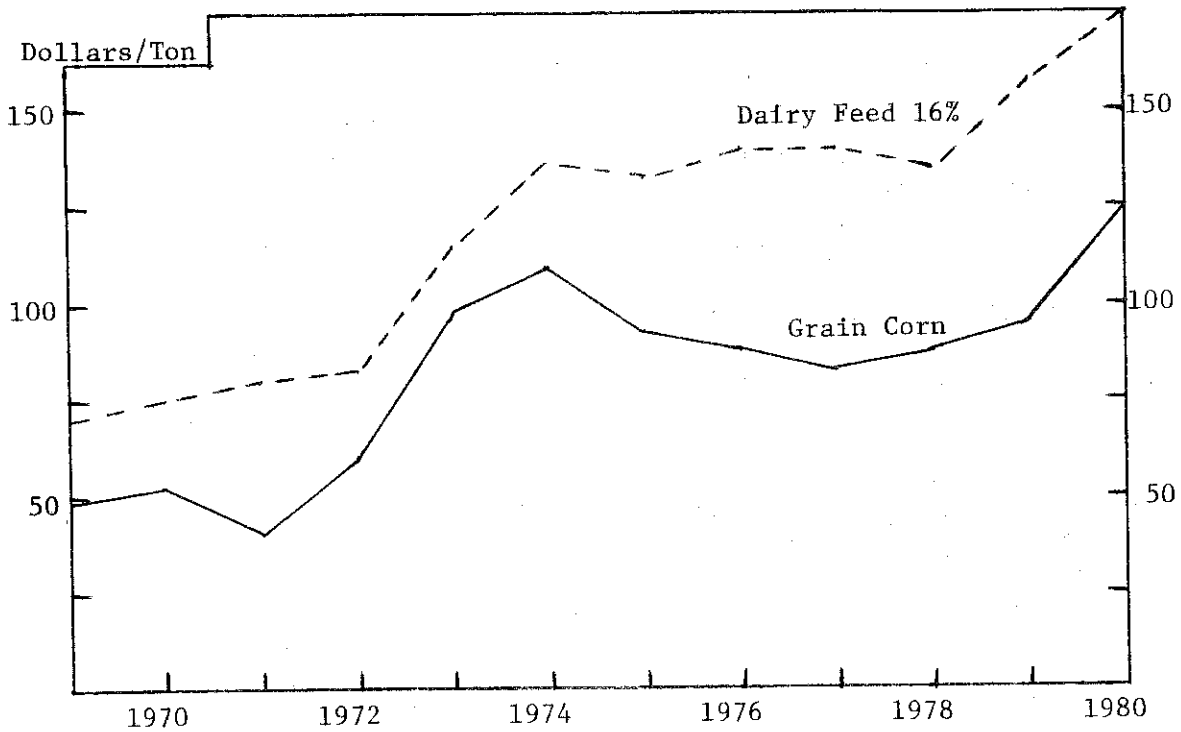
Farmers experiment continuously with the management of their farms. New techniques and ideas are considered by the operators and many of them are tried. Observing the results of these management experiments is a fundamental part of farm management research.

Information on farm businesses can be obtained in various ways. For 75 years, New York farmers have cooperated with Cornell researchers by providing business information on their operations. Two general sources of such information currently are available in the Department of Agricultural Economics at Cornell University. The first is a group of about 30 Cost Account Cooperators who provide detailed information on all enterprises on their farms. The second is a group of more than 700 Farm Business Management Cooperators who submit physical and financial data on the farm business unit as a whole. These two sources were used for this study.

Cross-tabulation analysis has been used in this study. Statistical tests have not been applied. The simple tabular analysis suggests much about the experiences and indicates certain relationships. All data are on computer tapes so it is relatively easy to make numerous comparisons. The main basis for classifying the farms in this study was the acres of corn harvested for grain in 1978.

Corn and Feed Prices

PRICES OF GRAIN CORN AND DAIRY FEED
New York, Annual Average, 1969-80



When examining the dairy feed price situation, it is helpful to compare the prices of grain corn and dairy feeds. During the 1970's the percent that corn prices were of dairy feed prices ranged from a low of 53 in 1971 to a high of 86 percent in 1973. Both corn and dairy feed prices rose during the seventies. This situation has caused dairymen to consider the growing of corn for grain as a way of keeping their feed costs under control.

Table 1. Annual Average Prices of Corn and 16% Dairy Ration
New York, 1969 to 1980

Year	Average Price Per Ton		Percent Corn is of Dairy Ration
	Corn	Dairy Ration	
1969	48	72	67
1970	52	77	68
1971	43	81	53
1972	61	83	73
1973	99	115	86
1974	108	138	78
1975	92	132	70
1976	86	139	62
1977	79	139	57
1978	88	136	65
1979	95	157	61
1980	125	174	70

Source: New York Crop Reporting Service.

Trends in Corn Production and Growing Costs

The acreage of corn for grain in New York increased from 200,000 acres in 1965 to 640,000 acres in 1977 or more than tripled. Corn for grain accounted for 30 percent of the total corn acreage in 1965 and 47 percent in 1978. Corn yields in New York also improved during the period 1965 to 1978.

Table 2. TRENDS IN CORN PRODUCTION
New York, 1965-1978

Year	Acreage			Yield Per Acre	
	Grain	Silage	Total	Grain Corn	Silage Corn
	- thousand acres -			bu.	tons
1965	200	475	675	61	12.0
1970	315	507	822	88	14.0
1971	405	549	954	85	14.0
1972	320	610	930	68	10.5
1973	420	620	1040	75	12.5
1974	525	650	1175	78	13.0
1975	545	660	1205	83	13.5
1976	573	655	1228	76	12.0
1977	640	654	1294	80	13.0
1978	600	682	1282	79	13.0

Source: 1979 New York Agricultural Statistics, Crop Production Annual.

The cost of production is an important consideration when evaluating a farm enterprise. Data from the Farm Cost Account enterprise records give an indication of the important cost items and the relative costs and returns over the period from 1963 to 1978 (Table 3).

The cost to produce an acre of corn for grain went from \$76 in 1963 to \$222 in 1978. The farmers estimated value of the corn per bushel in 1978 was 19 cents lower than the cost to produce it, whereas in 1973, the value per bushel was 32 cents higher than the cost.

Table 3. COST PER ACRE OF PRODUCING CORN FOR GRAIN
New York Cost Account Farms, 1963, 1968, 1973, 1978

Cost Item	1963	1968	1973	1978
Machinery	\$ 17	\$ 23	\$ 34	\$ 47
Land used	8	12	22	26
Fertilizer	23	27	21	63
Seed, sprays & dusts	5	10	16	30
Labor	12	8	12	18
Other	11	15	16	38
Total Cost per Acre	\$ 76	\$ 95	\$121	\$222
Average Yield (bu.)	56	61	60	92
Cost per Bushel	\$1.36	\$1.56	\$2.02	\$2.41
Returns per Bushel	\$1.28	\$1.23	\$2.34	\$2.22

Corn for Grain on Farms of Business Management Cooperators

There were 527 New York Dairy farm business management cooperators in the 1978 business summary.* These were specialized dairy operations since all with cash crops or other kinds of enterprises were excluded from this summary. The cooperators participate on a voluntary basis so they are not representative of all farms in the State. The 527 are considered to be a good cross-section of better than average dairymen in the State.

A study of the experiences of these 527 farms gives some leads in relation to the feasibility of growing corn for grain as a way of controlling feed costs and making a good return from the business. The data were examined from this point of view. The farms were grouped on the basis of the acres of corn grown for grain, then various features of the businesses were observed.

Farms Growing Corn for Grain

Of the 527 farms in the study, 322 or 62 percent grew no corn for grain (Table 4). However, these 322 farms did grow an average of 55 acres of corn for silage. Only 23 farms out of the 527 grew no corn at all. A total of 205 or 38 percent of the farms grew some corn for grain in 1978.

Table 4. DISTRIBUTION OF DAIRY FARMS BY ACRES OF CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Farms		Acres of Corn Grown		
	Number	Percent	Silage	Grain	Total
None	322	62	55	0	55
1 to 9	31	6	51	5	56
10 to 24	44	8	53	16	69
25 to 49	49	9	60	34	94
50 or more	81	15	90	95	185
All Farms	527	100	60	19	79

The 205 farms were divided into four groups on the basis of the acres of corn harvested for grain. There were 31 farms or 6 percent of all farms that had less than 10 acres of corn for grain. Some of these probably were simply harvesting for grain the corn not needed for silage. There were 81 farms or 15 percent with 50 or more acres of corn for grain.

The farms growing corn for grain were located in 37 out of the 49 counties represented in the study. Twelve counties had no farms with corn grown for grain. On the other hand, 30 of the 49 counties had one or more growers with 50 or more acres of corn for grain. The dairymen growing corn for grain were scattered throughout the State.

* A.E. Res. 79-6, Dairy Farm Management Business Summary, New York 1978.

All groups except the group of 81 farms growing 50 or more acres of corn for grain, grew more acres of corn for silage than corn for grain. For the 527 farms, there was an average of 60 acres of corn for silage and 19 acres of corn for grain or about one-fourth of all acreage was for grain. The farms with the largest acreage of corn for grain also had the largest acreage for silage (i.e., 90 acres).

Acres Corn for Grain and Income

Various measures of income are used in studying farm businesses. For this analysis, net cash farm income and labor and management income were used.

The more acres of corn for grain the larger the net cash farm income per farm (Table 5). The farms with no corn for grain averaged \$22,974 net cash farm income while the farms with 50 or more acres of corn for grain averaged \$43,865 or nearly twice as much.

Table 5. INCOME FROM DAIRY FARMS GROUPED BY ACRES OF CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Net Cash Farm Income	Labor and Management Income			
		Per Operator	Per Cow	Per Crop Acre	Per \$1,000 Capital
None	\$22,974	\$17,702	\$333	\$114	\$76
1 to 9	22,530	17,700	342	108	73
10 to 24	23,840	14,927	322	105	67
25 to 49	33,502	20,228	337	108	71
50 or more	43,865	31,534	372	110	77
All Farms	\$27,207	\$20,135	\$343	\$112	\$76

The average labor and management income per operator was higher for the farms with 25 or more acres of corn for grain than for the groups with less than 25 acres of corn for grain. The average labor and management income per operator for those with no corn for grain was \$17,702 and for those with 50 or more acres was \$31,534 or about 80 percent more. The difference in incomes should not all be attributed to the corn for grain since it is only one of many factors affecting returns from the business.

The average labor and management incomes per crop acre and per \$1,000 of capital were about the same for the farms with little or no corn for grain and for the farms with 50 or more acres of corn for grain. The average labor and management incomes per cow, on the other hand, did appear to be related to the acres of corn grown for grain. Farms with 25 or more acres of corn for grain had higher labor and management incomes per cow than the farms with no corn for grain.

Comparison of Business Factors by Acres of Corn Grown for Grain

One way to study farm management practices is to observe the experiences of farmers whose practices vary. In this study the farms have been grouped according to the acres of corn grown for grain and then their operations and results have been determined. This suggests how the growing of corn for grain fits into the dairy operation and its effects on the farm business financial summary.

Crop Programs

The 527 dairy farmers in this study rented an average of 58 acres or 27 percent of the total crop acres operated. The farms growing 50 acres or more of corn for grain rented larger acreages and a larger proportion of the total crop acres than did those growing no corn for grain or small acreages (Table 6).

For all farms in the study, 36 percent of the crop acres were used for corn and 9 percent were used for corn for grain. The farms with more corn for grain had a larger proportion of their cropland in corn and also a larger percentage in corn for grain. The one-sixth of the farms growing 50 acres or more of corn for grain had 49 percent of their cropland in corn with 25 percent in corn for grain (Table 6). In general, it might be concluded that the farms growing larger acreages of corn for grain did it in part by renting more land and by using a larger proportion of the available cropland for corn and especially corn for grain.

Table 6. ACRES OF CROPLAND ON DAIRY FARMS GROUPED BY ACRES OF CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Crop Acres				Percent of Crop Acres	
	Total	Owned	Rented	% Rented	All Corn	Grain Corn
None	184	145	39	21	30	0
1 to 9	175	138	37	21	32	3
10 to 24	178	131	47	26	39	9
25 to 49	237	158	79	33	40	14
50 or more	375	242	133	35	49	25
All Farms	217	159	58	27	36	9

Hay and corn were the major crops on the 527 dairy farms. The hay crops averaged 128 acres per farm and corn 79 acres. Oats and all other crops accounted for only an average of 10 acres per farm. The farms with 50 or more acres of corn for grain averaged 185 acres of corn and 173 acres of hay crops (Table 7). The farms with more corn for grain also had larger acreages and a higher proportion of the hay crops harvested as hay silage. This is another indication of the type of cropping practices followed.

Table 7. CROPS GROWN ON DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Acres Hay Silage Cut	Acres Used For:			
		Hay Crops	Corn	Oats	Other
None	42	122	55	3	4
1 to 9	23	108	56	8	3
10 to 24	35	100	69	7	2
25 to 49	72	129	94	10	4
50 or more	106	173	185	13	4
All Farms	71	128	79	6	4

Size of Business

In general, it was the larger farm businesses that grew more corn for grain. This was true for all the common measures of size used in the dairy farm business analyses. The first and most logical measure would be crop acres. The average crop acres for the 62 percent of the farms with no corn for grain was 184 acres, while the farms with 10 to 24, 25 to 49, and 50 or more acres of corn for grain averaged 178, 237, and 375 acres of crops respectively (Table 6).

For most measures of size, the farms with 1 to 9 acres of corn for grain were smaller than the non-corn-for-grain farms. This probably indicates that these were smaller operations with some corn not needed for silage so it was harvested for grain. With the three groups that grew 10 or more acres of corn for grain, the larger the acres of corn for grain the larger the business. For example, the average man equivalent per farm was 2.1, 2.6 and 3.6 respectively for the farms with 10 to 24, 25 to 49, and 50 or more acres of corn for grain (Table 8).

The 81 farms with 50 or more acres of corn for grain averaged 111 cows and 83 heifers. This compares with an average of 71 cows and 49 heifers for all 527 farms. Similarly, the average cash receipts for the 81 farms was \$195,000 compared with \$117,000 for the 527 farms (Table 8). The comparable capital measures of size were \$533,000 and \$322,000 respectively.

Table 8. SIZE OF BUSINESS ON DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Man Equivalent	Number Cows	Number Heifers	Cash Receipts	Capital (End Inventory)
None	2.3	63	42	\$100,725	\$275,340
1 to 9	1.9	55	35	91,058	259,154
10 to 24	2.1	58	44	97,484	280,314
25 to 49	2.6	76	55	132,179	361,154
50 or more	3.6	111	83	194,648	532,857
All Farms	2.4	71	49	\$117,244	\$322,362

Rates of Production

Production levels are always an important factor in a dairy farm business analysis. These were examined in this study and are shown in Table 9. Pounds of milk sold per cow is a key indicator of rates of production on a dairy farm. In general, the more corn grown for grain on these farms, the more milk sold per cow. Farms with no corn for grain averaged 13,568 pounds per cow while those with 50 or more acres averaged 14,204. This relationship was affected by many practices of which corn for grain would be one.

An examination of the average crop yields for the five groups of farms shows that the yields generally were higher on the farms growing more corn for grain. For example, the farms with 50 or more acres of corn for grain had average yields of hay crops per acre of 2.8 tons of dry hay equivalent compared with only 2.2 tons for those with no corn for grain. The more acres of corn for grain, generally the higher the average corn silage yield per acre (Table 9).

Table 9. RATES OF PRODUCTION ON DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Lbs. Milk Sold/Cow	Tons H.E. Per Acre Hay Crops	Tons Corn Silage/Acre	Bu. Corn Per Acre	Bu. Oats Per Acre
None	13,568	2.2	13.4	--	60.5
1 to 9	13,929	2.5	13.2	83.8	62.2
10 to 24	14,174	2.7	13.0	97.1	62.8
25 to 49	14,322	2.9	14.3	96.4	62.7
50 or more	14,204	2.8	15.2	91.9	64.4
All Farms	13,796	2.4	13.9	92.6	62.8

The conclusion might be drawn from this that the farms growing corn for grain had better land resources and in turn better crop yields. In brief, the corn for grain was grown on farms with relatively good cropland. Another factor likely is that of better managerial ability of the dairymen on the farms growing more corn for grain. It might be stated that the better managers tend to grow more corn for grain.

Labor Efficiency

Efficient use of labor is an important factor in achieving a profitable farm business. The farms growing corn for grain in general had more acres of crops per man and more cows per man than those with no corn for grain (Table 10), and with their higher producing cows, the farms with more corn for grain sold more milk per man.

Work units are used as a measure on diversified farms. A work unit is the amount of work accomplished per day under average conditions. This measure combines the crop and livestock work so merits consideration here. Again, in general, the labor efficiency as measured by work units per man was greater on the farms with more acres of corn grown for grain (Table 10).

Table 10. LABOR EFFICIENCY ON DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Crop Acres Per Man	Cows Per Man	Lbs. Milk Sold Per Man	Work Units Per Man
None	80	28	379,900	304
1 to 9	92	29	399,000	317
10 to 24	85	28	395,200	313
25 to 49	91	29	421,900	328
50 or more	104	31	440,400	352
All Farms	90	29	404,800	325

It might be concluded that growing corn for grain had a positive effect on the labor efficiency on the dairy farms studied.

Capital Efficiency

The amount of capital per man tended to increase as the acres of corn for grain increased (Table 11). For the per cow and per crop acre owned measures of capital efficiency, the least investment per unit was for the farms with no corn for grain while there seemed to be little difference among the groups growing various amounts of corn for grain. The total machinery investment was higher for farms growing 25 or more acres of corn for grain. However, the machinery investment per cow showed no significant difference for the groups studied (Table 14).

The capital turnover or years for receipts to equal capital investment was not significantly different for the larger growers of corn compared to small grain corn growers.

Table 11. CAPITAL EFFICIENCY ON DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Total Farm Inventory		Land and Buildings		Capital Turnover
	Per Man	Per Cow	Per Cow	Per Crop Acre Owned	
None	\$122,373	\$4,302	\$2,193	\$ 968	2.3
1 to 9	134,976	4,628	2,379	965	2.4
10 to 24	134,766	4,751	2,561	1,153	2.5
25 to 49	139,982	4,690	2,360	1,150	2.4
50 or more	148,843	4,634	2,314	1,100	2.3
All Farms	\$133,207	\$4,477	\$2,278	\$1,032	2.3

Feed Costs

The corn grown for grain on these 527 dairy farms was used for feed. In the study, all farms with crop sales that were 10 percent or more of the milk sales were excluded from the 527 and were included in a special group called "dairy-cash crop farms." Consequently, in this study, it is logical to expect that growing corn for grain would have an effect on the feed costs, and it did.

The average feed bought per cow for farms with no corn for grain was \$451 while on farms with 50 or more acres of corn for grain it was \$333. The more corn for grain the lower the cost of feed bought per cow (Table 12). On the other hand, the crop expense per cow increased as the acres of corn for grain increased. However, the combined feed bought and crop expense per hundred-weight of milk sold tended to decrease as the acres of corn increased (\$4.03 for no corn to \$3.45 with 50 or more acres).

Table 12. FEED COSTS ON DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Feed Bought Per Cow	Crop Expense Per Cow	% Feed Bought is of Milk	Per Cwt. Milk Expense	
				Feed Bought	Feed & Crops
None	\$451	\$ 95	32%	\$3.32	\$4.03
1 to 9	414	114	29	2.97	3.79
10 to 24	409	127	27	2.89	3.78
25 to 49	373	137	25	2.60	3.56
50 or more	333	156	22	2.34	3.45
All Farms	\$408	\$117	28%	\$2.96	\$3.81

Percent feed bought is of milk receipts is a common measure used in the feed cost analysis on a dairy farm. The farms with no corn for grain spent 32 percent of the milk receipts for purchased feed while the farms with 50 or more acres of corn for grain only spent 22 percent. It would appear that the growing of corn for grain on these dairy farms did have an effect on the feed costs.

Practices that affect feed costs on dairy farms are reported in Table 13. The farms growing corn for grain had a higher percentage of heifers to cows, more crop acres per cow, more tons of hay equivalent per crop acre and per cow, and also higher lime and fertilizer expense per crop acre. The two groups with larger grain corn acreages averaged 0.4 and 0.9 acres of corn for grain per cow.

The farms with 50 acres or more of corn for grain produced 8.5 tons H.E. of roughages per cow on 2.4 acres compared with 8.2 tons on 2.8 acres for the "no corn for grain" farms (Table 13). This supports the generally accepted idea that corn will produce more feed per acre than hay. The average yields for the 527 farms as reported in Table 9 showed 4.6 tons H.E. per acre of corn silage ($13.9 \div 3 = 4.6$) compared with 2.4 tons per acre of hay.

Table 13. FEED FACTORS ON DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Heifers as % of Cows	Crop Acres Per Cow			Tons H.E.		Fertilizer & Lime Per Crop Acre
		Grain Corn	Forages	Total	Per Acre Forages	Per Cow	
None	67%	0.0	2.8	2.9	2.9	8.2	\$21
1 to 9	64	0.1	2.9	3.2	3.1	9.1	25
10 to 24	76	0.3	2.7	3.1	3.2	8.5	26
25 to 49	72	0.4	2.5	3.1	3.5	8.7	27
50 or more	75	0.9	2.4	3.4	3.6	8.5	28
All Farms	69%	0.7	2.7	3.1	3.1	8.3	\$24

Machinery Costs

Growing corn for grain generally means more machinery at least for the harvest operations. For this reason, the machinery costs were examined in this analysis. As would be expected, the total machinery inventory was greater on the farms growing more corn for grain. Part of this would be due to the corn for grain harvest equipment but part would also be due to generally larger operations.

Machine hire expense per farm was greater on the farms growing more corn for grain. This suggests that some were hiring certain grain corn operations done. There appeared to be a relationship between machinery costs per cow and per hundredweight of milk and the amount of corn grown. The total labor and machinery cost per cow also was greater on the farms with corn for grain than on those with none (Table 14).

Table 14. MACHINERY COSTS ON DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Machinery Inventory		Machine Hire	Machinery Cost		Labor and Machinery Cost/Cow
	Amount	Per Cow		Per Cow	Per Cwt. Milk	
None	\$51,111	\$811	\$584	\$267	\$1.97	\$527
1 to 9	49,799	905	690	291	2.09	565
10 to 24	51,605	890	636	306	2.16	589
25 to 49	71,775	944	814	322	2.25	602
50 or more	96,633	871	2,218	312	2.20	610
All Farms	\$59,993	\$833	\$867	\$286	\$2.07	\$554

The machinery investment and machinery costs on modern dairy farms are sizable items. Dairy men who plan to grow more corn for grain must watch these items and keep them under control if they are to succeed in making better incomes.

Crop Expenses

Expenses per crop acre were higher on the farms growing corn for grain (Table 15). Total crop expense per crop acre was \$33 for those with no grain corn and \$46 for those with 50 or more acres. Fertilizer and lime accounted for the largest difference but the other items also were greater. In brief, more crop inputs are used per acre of corn for grain than on hay or cereal crops.

Table 15. CROP EXPENSES ON DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Expense Per Crop Acre For:			Total
	Fertilizer & Lime	Seeds	Spray, etc.	
None	\$21	\$ 7	\$5	\$33
1 to 9	25	6	4	35
10 to 24	26	9	6	41
25 to 49	27	10	7	44
50 or more	28	10	8	46
All Farms	\$24	\$ 8	\$6	\$38

Rent and Wages

The rental expense per acre was higher on the farms with 50 or more acres of corn for grain than the other groups. This may suggest that those growing sizable acres of corn bid up the rental rates in order to get available land.

Hired labor expense per man month hired in general was higher on the farms with more acres of corn for grain. This is likely more a function of the larger business than of the corn for grain. Studies have shown that larger and more profitable farms tend to pay better wages than the smaller and less profitable operations (Table 16).

Table 16. RENT AND WAGES OF DAIRY FARMS GROUPED BY ACRES CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Hired Labor		Expense Per Month	Rented Land		Expense Per Acre
	Months	Expense		Acres	Expense	
None	9	\$ 5,588	\$671	39	\$ 897	\$23
1 to 9	8	6,018	752	37	775	21
10 to 24	8	6,052	757	47	932	20
25 to 49	14	10,689	764	79	1,821	23
50 or more	25	21,803	872	133	3,689	28
All Farms	12	\$ 8,618	\$718	58	\$1,408	\$24

Business Characteristics

The farms growing corn for grain were generally distributed over the State as indicated by the number of counties represented in each group. For example, the 81 farms in the 50 or more acres group were located in 30 different counties (Table 17).

Table 17. BUSINESS CHARACTERISTICS OF DAIRY FARMS
GROUPED BY ACRES CORN FOR GRAIN
527 New York Dairy Farms, 1978

Acres Corn for Grain	Counties Represented	% Barns Free Stall	% With Dairy Records	Av. Number Operators	Operator's Aver.	
					Age	Yrs School
None	38	30%	82%	1.2	41	13
1 to 9	20	26	77	1.1	40	13
10 to 24	21	18	86	1.2	40	13
25 to 49	26	39	92	1.3	43	13
50 or more	30	64	93	1.3	43	13
All Farms	47	35%	85%	1.2	41	13

A higher proportion of the farms growing 25 acres or more of corn for grain had free stall barns. Only 30 percent of the no corn for grain farms had free stalls compared with 64 percent of those with 50 or more acres of corn for grain. A slightly higher percent of the corn for grain farms had dairy records. The farms with corn for grain also had more multi-operator arrangements which are probably associated with the larger size businesses. The operators growing 25 acres or more of corn for grain were a little older (43 vs 40) but there was no difference in years of school.

Herd Size and Corn for Grain

Size of business is a major factor affecting incomes on dairy farms. In order to study both the effects of size and the corn for grain factor, the farms were first divided into seven size groups and then each group was subdivided on the basis of whether or not the farm grew corn for grain. The results are presented in this section.

For the two largest groups, the farms growing corn for grain had higher labor and management incomes per operator than the farms with no corn for grain (Table 18). For the other herd sizes the labor incomes varied with three groups with no corn for grain having higher incomes than those with corn for grain.

It is of interest to note that only about one-third of the farms with herds of less than 70 cows grew corn for grain, while more than half of the farms with 100 or more cows grew corn for grain. This suggests that there are interrelationships existing between the size of herd and the practice of growing corn for grain.

Table 18. LABOR AND MANAGEMENT INCOME BY HERD SIZE AND CORN FOR GRAIN
527 New York Dairy Farms, 1978

Number Cows in Herd	No Corn for Grain		Corn for Grain	
	Number of Farms	Labor Income Per Operator	Number of Farms	Labor Income Per Operator
Less than 40	63	\$10,080	10	\$ 8,470
40 to 54	104	13,725	52	15,523
55 to 69	62	17,038	42	20,806
70 to 84	36	21,396	32	18,898
85 to 99	14	23,641	20	15,450
100 to 149	33	27,116	30	35,036
150 or more	10	40,308	19	47,863

The major farm business factors for the farms growing corn for grain and those not are compared for the seven herd size groups in Table 19. Even when grouped by size of herd, the farms who grew corn for grain averaged more total acres of crops and cash receipts than the farms with no corn for grain.

Table 19. SELECTED BUSINESS FACTORS BY HERD SIZE AND CORN FOR GRAIN
527 New York Dairy Farms, 1978

Business Factor	Less than 40 Cows		40-54 Cows		55-69 Cows		70-84
	Corn	No Corn	Corn	No Corn	Corn	No Corn	Corn
Man equivalent	1.8	1.5	1.8	1.9	2.1	2.3	2.7
Number cows	34	33	46	46	61	60	75
Acres in crops	131	108	155	143	218	186	279
Crop acres rented	25	16	38	25	75	36	110
Acres corn for grain	17	0	19	0	33	0	55
Total cash receipts	\$54,309	\$50,768	\$78,287	\$71,157	\$105,932	\$98,301	\$133,854
Lbs. milk sold/cow	13,100	12,845	14,285	13,228	14,421	13,975	14,880
Tons hay crops/acre	2.9	2.0	2.5	2.2	2.6	2.2	2.7
Tons corn silage/acre	13.7	12.7	14.7	12.7	13.6	12.9	14.6
Bu. oats/acre	66.1	42.6	65.4	85.4	61.5	53.7	65.1
Lbs. milk sold/man	254,514	282,600	359,071	316,927	422,933	372,667	417,978
Man work units/man	222	245	288	263	337	293	326
Feed bought/cow	\$271	\$410	\$380	\$428	\$362	\$447	\$344
Feed bought/cwt. milk	\$2.07	\$3.19	\$2.66	\$3.24	\$2.51	\$3.20	\$2.31
Feed & crop expense per cwt. milk	\$2.89	\$3.84	\$3.57	\$3.88	\$3.46	\$3.90	\$3.44
% Feed is of milk	20%	31%	26%	32%	24%	31%	22%
Fertilizer/crop acre	\$17	\$17	\$23	\$17	\$25	\$21	\$30
Machinery cost/cow	\$331	\$279	\$320	\$267	\$315	\$282	\$343
Farm capital/cow	\$5,048	\$4,773	\$5,278	\$4,576	\$4,832	\$4,458	\$5,059
Value land & buildings per crop ac. owned	\$1,020	\$1,085	\$1,274	\$1,050	\$1,208	\$1,046	\$1,261
Machinery investment per cow	\$940	\$891	\$983	\$849	\$1,013	\$831	\$959
Av. price/cwt. milk	\$10.44	\$10.39	\$10.39	\$10.24	\$10.43	\$10.35	\$10.56

For all seven herd sizes, the farms growing corn for grain rented more cropland than those not growing grain corn. This suggests a management practice used by dairy-men to expand their corn acreage. The growing of roughage for the dairy usually has first claim on available crop acres so unless additional acreage is available it is impractical to grow corn for grain.

A comparison of rates of production showed that for all herd size groups the farms growing corn for grain had higher yields and sold more milk per cow than those with no corn for grain.

In general, for all the important business factors the farmers growing corn for grain, in all herd size groups, rated better than those with no corn for grain.

Table 19. SELECTED BUSINESS FACTORS BY HERD SIZE AND CORN FOR GRAIN
(continued) 527 New York Dairy Farms, 1978

Business Factor	Cows		85-99 Cows		100-149 Cows		150 or More	
	No Corn	Corn	No Corn	Corn	No Corn	Corn	No Corn	
Man equivalent	2.5	3.1	2.6	3.7	3.4	5.9	4.6	
Number cows	74	90	91	118	119	209	167	
Acres in crops	213	292	242	362	345	587	351	
Crop acres rented	42	95	68	135	119	252	143	
Acres corn for grain	0	59	0	83	0	118	0	
Total cash receipts	\$123,551	\$154,745	\$147,589	\$205,480	\$193,518	\$354,174	\$283,968	
Lbs. milk sold/cow	14,304	13,745	13,707	14,578	13,798	13,873	14,078	
Tons hay crops/acre	2.4	3.4	2.3	2.9	2.2	2.5	2.3	
Tons corn silage/acre	14.0	13.8	14.5	14.9	13.7	14.4	13.6	
Bu. oats/acre	48.7	60.3	30.6	54.3	63.1	72.7	----	
Lbs. milk sold/man	423,400	400,974	483,450	468,719	480,117	489,780	513,319	
Man work units/man	324	333	386	358	380	379	377	
Feed bought/cow	\$482	\$342	\$483	\$361	\$481	\$374	\$477	
Feed bought/cwt. milk	\$3.37	\$2.49	\$3.52	\$2.47	\$3.48	\$2.70	\$3.39	
Feed & crop expense per cwt. milk	\$4.18	\$3.60	\$4.21	\$3.44	\$4.17	\$3.72	\$4.19	
% Feed is of milk	32%	23%	33%	24%	33%	25%	31%	
Fertilizer/crop acre	\$27	\$31	\$22	\$26	\$21	\$32	\$33	
Machinery cost/cow	\$262	\$344	\$286	\$289	\$265	\$281	\$248	
Farm capital/cow	\$4,737	\$4,876	\$3,744	\$4,415	\$4,027	\$4,043	\$3,096	
Value land & buildings per crop ac. owned	\$1,174	\$1,219	\$1,046	\$1,189	\$1,168	\$1,286	\$1,281	
Machinery investment per cow	\$926	\$951	\$593	\$809	\$720	\$671	\$630	
Av. price/cwt. milk	\$10.38	\$10.63	\$10.64	\$10.44	\$10.48	\$10.77	\$10.79	

Summary

Thirty-eight percent of the 527 farms in the 1978 New York dairy farm business summary harvested some corn for grain. One farm out of four had 25 or more acres, and the farms with 50 or more acres averaged 95 acres of corn for grain. These farms were scattered throughout the State.

The net cash farm incomes and the labor and management income per operator tended to be higher for the farms with corn for grain than for those with none. The average labor income for farms with 50 or more acres of corn was 80 percent more than of farms with no corn for grain, while the net cash farm incomes were about double. However, it must not be assumed that all the difference was due to the corn for grain as many factors affect incomes.

Size is an important factor affecting labor incomes, so the 527 farms were divided into seven herd sizes and then each size studied on the basis of corn or no corn for grain. In four groups, those with corn for grain had labor incomes per operator that averaged \$1,800, \$3,800, \$7,500, and \$8,000 higher per operator, while in three groups the labor incomes averaged \$1,600, \$2,500 and \$8,000 lower.

Rates of production were higher on the farms with corn for grain. The pounds of milk sold per cow in general was higher as well as the yields of various crops. This likely reflects a combination of better land resources and better management practices. The farms with corn for grain had higher fertilizer and machinery costs but lower feed costs than the farms with no corn for grain.

For all seven herd size groups the dairymen with corn for grain had more total acres of cropland and more acres rented than those with no corn for grain. This suggests that renting land was used as a way to get additional cropland which could be used for corn for grain.

In brief, under 1978 price conditions, New York dairymen who had the land resources and managerial skills to grow and harvest corn for grain, in general, made better incomes than those who did not. Data for 1977 which was summarized on page 20 showed similar results. Likewise, the results for 1978 were comparable to those reported in studies for 1973 & 1974. If similar conditions continue in the years ahead, more dairymen with the proper resources will likely turn to growing corn for grain.

Appendix

The purpose of this study was to provide information based on the experience of farmers which could be used in evaluating alternatives concerning the growing of corn for grain on New York dairy farms. These data must be used judiciously since due to interrelationships it is easy to attribute effects to the wrong or partially wrong causes.

Many questions arise in studying the experiences of the 527 farms in relation to growing corn for grain. The general operating statements for three groups of farms, presented on pages 17 to 19, can be used to compare various business summary and analysis factors for the three groups. Selected business factors for 1977 farms by acres of corn for grain are on page 20. These also can be used for comparisons.

FARM BUSINESS SUMMARY
Average of 322 New York Dairy Farms, 1978
With 0 Acres of Corn for Grain

CAPITAL INVESTMENT

	<u>1/1/78</u>	<u>1/1/79</u>
Livestock	\$ 50,265	\$ 66,746
Feed & supplies	13,627	17,138
Machinery & equipment	45,499	51,111
Land & buildings	<u>130,827</u>	<u>140,345</u>
TOTAL INVESTMENT	\$240,218	\$275,340

EXPENSES

Labor

Hired \$ 5,588

Feed

Dairy concentrate 28,410
Hay and other 1,509

Machinery

Machine hire 584
Machinery repair 4,443
Auto expense 348
Gas and oil 2,731

Livestock

Purchased animals 3,300
Breeding fees 1,075
Veterinary, medicine 1,552
Milk marketing 2,360
Other livestock expense 3,190

Crops

Fertilizer and lime 3,854
Seeds and plants 1,259
Spray and other 886

Real Estate

Land, building, fence repair 1,600
Taxes 2,160
Insurance 1,546
Rent 897

Other

Telephone (farm share) 382
Electricity (farm share) 1,599
Interest paid 7,332
Miscellaneous 1,146

TOTAL CASH EXPENSES \$ 77,751

Machinery depreciation \$ 5,353

Building depreciation 2,629

Unpaid labor 1,700

Interest on farm equity @ 7% 12,290

TOTAL FARM EXPENSES \$ 99,723

RECEIPTS

Milk sales \$ 89,005
Crop sales 537
Dairy cattle sold 7,174
Other livestock sales 1,909
Gas tax refund 110
Government payments 972
Work off farm 54
Custom machine work 99
Miscellaneous 865

TOTAL CASH RECEIPTS \$100,725

Increase in livestock \$ 16,481

Increase in feed & supplies 3,511

TOTAL FARM RECEIPTS \$120,717

FINANCIAL SUMMARY

Total Cash Receipts \$100,725

Total Cash Expenses 77,751

NET FARM CASH FLOW \$ 22,974

Total Farm Receipts \$120,717

Total Farm Expenses 99,723

LABOR & MGT. INCOME/FARM \$ 20,994

Number of operators (382) 1.2

LABOR & MGT. INCOME/OPERATOR \$ 17,702

BUSINESS FACTORS

Man equivalent 2.3

Number of cows 63

Number of heifers 42

Acres of hay crops 122

Acres of corn silage 59

Total acres of crops 184

Lbs. of milk sold 854,800

Lbs. of milk sold/cow 13,568

Tons hay crops/acre 2.2

Tons corn silage/acre 13.4

Cows per man 28

Lbs. of milk sold/man 379,911

% Feed is of milk sales 32%

Feed & crop exp./cwt. milk \$4.03

Fertilizer & lime/crop acre \$21

Machinery cost/cow \$267

Av. Price/cwt. milk \$10.41

FARM BUSINESS SUMMARY
Average of 49 New York Dairy Farms, 1978
With 25-49 Acres of Corn for Grain

CAPITAL INVESTMENT

	<u>1/1/78</u>	<u>1/1/79</u>
Livestock	\$ 62,571	\$ 79,440
Feed & supplies	24,111	28,185
Machinery & equipment	65,958	71,775
Land & buildings	<u>173,869</u>	<u>181,754</u>
TOTAL INVESTMENT	\$326,509	\$361,154

EXPENSES

<u>Labor</u>	
Hired	\$ 10,689
<u>Feed</u>	
Dairy concentrate	28,310
Hay and other	1,650
<u>Machinery</u>	
Machine hire	814
Machinery repair	7,065
Auto expense	501
Gas and oil	3,633
<u>Livestock</u>	
Purchased animals	3,335
Breeding fees	1,542
Veterinary, medicine	2,035
Milk marketing	3,866
Other livestock expense	4,044
<u>Crops</u>	
Fertilizer and lime	6,357
Seeds and plants	2,387
Spray and other	1,696
<u>Real Estate</u>	
Land, building, fence repair	1,944
Taxes	2,904
Insurance	1,955
Rent	1,821
<u>Other</u>	
Telephone (farm share)	413
Electricity (farm share)	2,273
Interest paid	8,347
Miscellaneous	<u>1,096</u>
TOTAL CASH EXPENSES	\$ 98,677
Machinery depreciation	\$ 7,625
Building depreciation	3,024
Unpaid labor	850
Interest on farm equity @ 7%	<u>17,358</u>
TOTAL FARM EXPENSES	\$127,534

RECEIPTS

Milk sales	\$114,179
Crop sales	1,062
Dairy cattle sold	11,655
Other livestock sales	1,942
Gas tax refund	184
Government payments	1,023
Work off farm	95
Custom machine work	346
Miscellaneous	<u>1,693</u>
TOTAL CASH RECEIPTS	\$132,179
Increase in livestock	\$ 16,869
Increase in feed & supplies	<u>4,074</u>
TOTAL FARM RECEIPTS	\$153,122

FINANCIAL SUMMARY

Total Cash Receipts	\$132,179
Total Cash Expenses	<u>98,677</u>
NET FARM CASH FLOW	\$ 33,502
Total Farm Receipts	\$153,122
Total Farm Expenses	<u>127,534</u>
LABOR & MGT. INCOME/FARM	\$ 25,588
Number of operators (62)	1.3
LABOR & MGT. INCOME/OPERATOR	\$ 20,228

BUSINESS FACTORS

Man equivalent	2.6
Number of cows	76
Number of heifers	55
Acres of hay crops	129
Acres of corn silage	60
Total acres of crops	237
Lbs. of milk sold	1,088,500
Lbs. of milk sold/cow	14,322
Tons hay crops/acre	2.9
Tons corn silage/acre	14.3
Cows per man	29
Lbs. of milk sold/man	421,899
% Feed is of milk sales	25%
Feed & crop exp./cwt. milk	\$3.56
Fertilizer & lime/crop acre	\$27
Machinery cost/cow	\$322
Av. Price/cwt. milk	\$10.49

FARM BUSINESS SUMMARY
Average of 81 New York Dairy Farms, 1978
50 or More Acres of Corn for Grain

CAPITAL INVESTMENT

	<u>1/1/78</u>	<u>1/1/79</u>
Livestock	\$ 90,625	\$122,299
Feed & supplies	41,103	47,778
Machinery & equipment	85,128	96,633
Land & buildings	244,161	266,147
TOTAL INVESTMENT	\$461,017	\$532,857

EXPENSES

Labor

Hired	\$ 21,803
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Feed

Dairy concentrate	36,957
Hay and other	2,226

Machinery

Machine hire	2,218
Machinery repair	9,827
Auto expense	410
Gas and oil	5,823

Livestock

Purchased animals	4,659
Breeding fees	2,183
Veterinary, medicine	3,219
Milk marketing	4,991
Other livestock expense	5,750

Crops

Fertilizer and lime	10,683
Seeds and plants	3,766
Spray and other	2,913

Real Estate

Land, building, fence repair	3,220
Taxes	4,512
Insurance	2,949
Rent	3,689

Other

Telephone (farm share)	661
Electricity (farm share)	2,954
Interest paid	12,868
Miscellaneous	2,502

TOTAL CASH EXPENSES \$150,783

Machinery depreciation	\$ 10,040
Building depreciation	4,733
Unpaid labor	850
Interest on farm equity @ 7%	25,345

TOTAL FARM EXPENSES \$191,751

RECEIPTS

Milk sales	\$169,498
Crop sales	2,027
Dairy cattle sold	15,084
Other livestock sales	3,664
Gas tax refund	216
Government payments	1,438
Work off farm	33
Custom machine work	537
Miscellaneous	2,151

TOTAL CASH RECEIPTS \$194,648

Increase in livestock	31,674
Increase in feed & supplies	6,675

TOTAL FARM RECEIPTS \$232,997

FINANCIAL SUMMARY

Total Cash Receipts	\$194,648
Total Cash Expenses	150,783

NET FARM CASH FLOW \$ 43,865

Total Farm Receipts	\$232,997
Total Farm Expenses	191,751

LABOR & MGT. INCOME/FARM \$ 41,246

Number of operators (106) 1.3

LABOR & MGT. INCOME/OPERATOR \$ 31,534

BUSINESS FACTORS

Man equivalent	3.6
Number of cows	111
Number of heifers	83
Acres of hay crops	173
Acres of corn silage	91
Total acres of crops	375
Lbs. of milk sold	1,576,600
Lbs. of milk sold/cow	14,204
Tons hay crops/acre	2.8
Tons corn silage/acre	15.2
Cows per man	31
Lbs. of milk sold/man	440,391
% Feed is of milk sales	22%
Feed & crop exp./cwt. milk	\$3.45
Fertilizer & lime/crop acre	\$28
Machinery cost/cow	\$312
Av. Price/cwt. milk	\$10.75

SELECTED BUSINESS FACTORS BY ACRES CORN FOR GRAIN
570 New York Dairy Farms, 1977

Business Factors	Acres Corn for Grain				
	None	1 to 9	10 to 24	25 to 49	50 or more
Number of farms	345	20	41	52	112
Percent of total	61%	3%	7%	9%	20%
<u>Crops Grown</u>					
Acres corn grain	0	5	15	34	107
Acres corn silage	48	31	40	58	88
Total crop acres	169	132	181	243	390
Crop acres rented	36	10	53	78	132
<u>Size of Business</u>					
Number men	2.3	1.9	2.1	2.7	3.6
Number cows	60	43	57	80	110
Cash receipts	\$ 84,404	\$ 56,698	\$ 83,618	\$116,998	\$175,473
<u>Rates of Production</u>					
Tons HE/acre hay	2.0	2.2	2.5	2.6	2.9
Tons corn silage/ac	13.6	11.8	14.0	14.3	15.2
Bu. corn/acre	---	71	103	89	89
Lbs. milk/cow	13,200	12,400	13,600	13,600	14,500
<u>Labor Efficiency</u>					
Crop acres/man	73	69	86	90	134
Lbs. milk/man	351,500	278,600	372,800	406,700	444,200
<u>Feed Costs</u>					
Feed bought/cow	\$424	\$321	\$347	\$348	\$320
Feed as % milk	33%	27%	26%	26%	22%
Feed & crop exp/cwt milk	\$3.82	\$3.17	\$3.32	\$3.43	\$3.25
<u>Labor & Machinery</u>					
Mach. cost/cow	\$234	\$245	\$284	\$259	\$293
Labor cost/cow	\$224	\$249	\$236	\$227	\$254
Mach. invest./cow	\$735	\$893	\$859	\$753	\$841
<u>Other Costs</u>					
Fert & lime/crop acre	\$18	\$16	\$19	\$24	\$27
Rent/acre	\$20	\$20	\$20	\$19	\$23
Total farm exp/cow	\$1,398	\$1,268	\$1,476	\$1,440	\$1,604
<u>Other</u>					
% freestall barns	26%	10%	20%	42%	63%
Land & bldgs/crop acre owned	\$926	\$753	\$1,025	\$1,048	\$952
<u>Financial Summary</u>					
Net cash farm income	\$19,041	\$17,132	\$20,878	\$27,494	\$37,967
Labor & mgt inc/oper	\$2,884	\$2,628	\$1,003	\$4,534	\$3,437
Average price milk	\$9.73	\$9.59	\$9.72	\$9.69	\$9.84