5-1947

A Farm Management Study of Dairy Farms in Duchesne County, Utah, 1945

Melvin M. Peterson
Utah State University

A FARM MANAGEMENT STUDY OF DAIRY FARMS IN DUCHESNE COUNTY, UTAH, 1945

by
Melvin M. Peterson

A thesis submitted to the Graduate Faculty of the Utah State Agricultural College in partial fulfillment of the requirements for the degree

of

MASTER OF SCIENCE

in

AGRICULTURAL ECONOMICS

1947

Approved:

_____
Major Professor and Thesis Director

_____
Head of Department

_____
Dean of Graduate School

ACKNOWLEDGEMENTS

The author wishes to thank members of the staff of the Department of Agricultural Economics, Utah State Agricultural College, for assistance and advice on this study; the County Agricultural Agent of Duchesne County for his assistance; Miss Tacy Chambers, Miss Cloteel Riggs, and Mrs. Fae Heslop for typographical work.

Table of Contents

List of Tables

List of Tables (Con'd)

A FARM MANAGEMENT STUDY OF DAIRY FARMS IN DUCHESNE COUNTY, UTAH, 1945

INTRODUCTION

The kinds of agricultural commodities grown in an area result largely from the physical, economic, and institutional setting of the area. Seldom does one factor alone determine the kind of production. The nature of the soil, the amount and the distribution of the precipitation, the topography of the area, and the length of the frost-free growing period are all important. Likewise, location with respect to markets and means of transportation is important, as are also the ownership of the land, the size of the farms, and the balance among the factors of production.

In Duchesne County the physical factors, location, and the presence of large areas of government-owned lands suggest that range livestock should be the dominant product of the area. However, because of settlement policies, many farms are too small for economic range livestock production, and are producing dairy products as the major source of income. A brief description of the factors influencing this development follows.

Investigations made under the direction of Brigham Young as early as 1861 showed that the Duchesne territory could be farmed only with difficulty. At that time it was thought that the physical resources were not favorable to intensive farming and were better adapted to range livestock production.

Prior to 1905, what is now Duchesne county was largely an Indian Reservation. Brigham Young, territorial governor and ex-officio Indian Agent, had proclaimed the Uinta Basin, of which Duchesne county is the western portion, as the home of the Indians living in that area as early as 1851.

The Federal Government confirmed this proclamation and entered into a treaty with the Indians by which all lands, except the reservation, which was only a part of the Basin area, were ceded to the Government.

In and just prior to 1905, individual allotments of land and water were made to the Indians, and the balance of the reservation was opened for homesteading by white people. Moreover, all the Indian land allotments retained a full water right. Because of the limitation of the water available in that area, most of the land settled by the white people had an inadequate supply 1/.

The precipitation in Duchesne county is so light that the major cultivated crops cannot be grown successfully without irrigation. The average annual precipitation at Duchesne City for 32 years was 9.61 inches. At Mount Emmons it averaged 7.92 inches over a period of 16 years (table 1). For 23 years of record at Myton, it was 6.90 inches annually.

In 1945, Duchesne county was short of water. The U. S. Weather Bureau reported 5.50 inches of precipitation at the Myton Station and 7.45 inches at the Duchesne Station, with the departure from normal of -1.68 and -2.04 inches, respectively 2/.

The growing season is short and limits the crops that can be grown successfully to forage, grains, truck crops, and the hardier fruits. At Duchesne the average growing season for 32 years was 112 days. For a

---

1/ Blanch, George T. A study of farm organization by types of farms in Uinta Basin. Utah Agr. Exp. Sta. Bul. 285. P. 5-7, Jan. 1939.

2/ United States Weather Bureau. Climatological data, Utah section. U. S. Department of Commerce. P. 76, 1945.

Table 1. Climatic summary at Selected Stations in Duchesne County, Utah, 1945 1/

	Duchesne	Mount Emmons	Myton
No. yrs. of record	32	14	20
Temperature in Fahrenheit degrees:			
January average	15.6	16.0	15.4
July average	68.5	68.1	72.4
Maximum	98	98	103
Minimum	-43	-30	-39
Killing frost dates:			
Last in spring	May 29	May 23	May 18
First in fall	Sept. 18	Sept. 28	Oct. 1
Ave. growing season days	112	128	136
Ave. precipitation:			
Years of record	33	16	23
Inches	9.61	7.92	6.90

1/ Agricultural Yearbook. Climate and men. U. S. Department of Agriculture. Washington, D. C. P. 1147, 1941.

period of 14 years an average growing season of 128 days was recorded at Mount Emmons. The growing season at Myton for a 20-year period averaged 136 days.

Essentially all of the cropped land is irrigated, but the total water available for irrigation is not adequate to fully supply all of the land being cropped.

In addition to insufficient water for all the lands, much of the land is poorly drained and contains a heavy impregnation of alkali. Consequently, much of the land is unsuited to intensive farming. Because most of the land is wholly unsuited to arable agriculture, and because much of the land that is cultivated has a limited water supply, relatively poor soil, and is broken into small patches because of irregular topography,

the area is naturally best adapted to range livestock production. However, the 160 acres alloted under the Homestead Act were too small for an economic range livestock unit.

Duchesne county is also handicapped because of location. Most of the produce exported from the county is trucked to Salt Lake City. Small quantities are sent by truck into Price and Heber. Beef cattle, lambs, sheep, horses, alfalfa seed, honey, and livestock products including butterfat and wool are the most important products sold.

In spite of the unfavorable conditions for general or intensive farming in this area, the farmers have maintained an abiding faith in the area and have proceeded to develop the agricultural resources of the area. Although the general opinion is that the area is primarily adapted to range livestock production, most of the farmers in the area do not have range permits or adequate farm resources to follow this type of farming.

In view of the inadequacy of the resources of the average farm for producing range livestock, greater intensification of the irrigated farms has become necessary. This has been made possible by building reservoirs for the storing of irrigation water. The use of this additional irrigation water, together with the use of improved farm practices, has resulted in the production of additional harvested feed, forage crops, and better pastures. This increased forage production has enabled the farmers on the irrigated farms to increase the production of dairy products. In fact, dairying has become a major enterprise on a large number of farms in Duchesne county.

This increased dairy production is verified by reports of the agricultural census for Duchesne county. In 1934, milk production was 2,424,471 gallons; in 1939 it was 2,929,382 gallons, and in 1944 production had risen to 3,703,014 gallons (table 2). Thus there was an increase

Table 2. Number of Cows Milked and the Production and Sales of Dairy Products from Farms in Duchesne County, 1934, 1939, and 1944. 1/

Item	1944	1939	1934
Cows & Heifers milked			
Farms reporting	919	944	1,035
Number milked	6,356	5,695	6,266
Milk produced (gallons)	3,703,014	2,929,382	2,424,471
Whole milk sold			
Farms reporting	534	325	2/
Gallons	2,228,736	977,946	2/
Cream sold			
Farms reporting	269	491	2/
Pounds butterfat	302,105	452,259	2/
Butter sold			
Farms reporting	9	12	2/
Pounds	2,625	2,054	2/
All dairy products sold			
Farms reporting	791	789	2/
Value in dollars	615,456	197,093	2/

1/ United States Census of Agriculture. 1940 and 1945. Total farms in Duchesne county for the years 1930, 1940 and 1945 were 1,052, 1,104, and 1,044 respectively.

2/ Data not available

of slightly more than 50 percent in 10 years. Sale of whole milk rose from 977,946 gallons in 1939 to 2,228,736 in 1944 with the number of farms

selling whole milk increasing from 325 to 534. Even more important than the increase was the change in methods of production and marketing. The number of farms selling cream decreased. Also, the total pounds of butterfat sold in the form of cream decreased over the same period. In 1939, 491 farms reported the sale of 452,259 pounds of butterfat in cream. But by 1944 the numbers of farms selling cream had fallen to 269, with 302,105 pounds of butterfat being sold as cream. The sale of butter churned on the farm remained relatively even.

The value of all dairy products increased substantially, although the number of farms reporting sales remained relatively the same. In 1940, 789 farms reported sales of dairy products, in 1939, to the value of $197,093. In 1945, 791 farms reported $615,456 as the value of the dairy products sold in 1944. A considerable part of this increase resulted from higher prices.

It is significant that the number of cows milked in 1934 and in 1944 remained relatively unchanged while the total volume of milk increased materially. This resulted from higher production per cow, which in turn is probably related to more feed available per cow.

OBJECTIVES

The objectives of this study were to ascertain the organization, the rates of production, the receipts and expenses, and the profits involved in operating dairy farms in Duchesne county; and to determine some of the factors affecting profits.

SOURCE OF DATA

In the spring of 1946, the Department of Agricultural Economics, in cooperation with the county agent of Duchesne county, made a survey of dairy farms in Duchesne county. This survey included the taking of detailed farm organization and management records on 49 dairy farms for the year 1945. These records were made available to the author in preparing this report.

The sources of other data used in this study were the 1941 Agricultural Yearbook of the United States Department of Agriculture, agricultural censuses of the United States for 1940 and 1945, and Climatological Data, 1945, published by the United States Weather Bureau, Department of Commerce.

DEFINITIONS OF TERMS

A Farm

A farm is the total land and livestock operated as one unit or by one man, partnership or family. Rented land or livestock is included in the farm of the man who operates it, but not in the farm of the legal owner.

Farm Type

A farm type represents a classification of farms according to the most important enterprise of the farm. A type is usually designated by the major enterprise, as a dairy farm, poultry farm, etc.

Capital

Capital is the total value of all property used in the farm

business, such as land, buildings, livestock, machinery, feeds and supplies. It includes the house, but not the household furnishings. Such items as the automobile that are used for both personal and farm purposes were divided on the basis of estimated use for each.

Expenses

Expenses include all cash expenses incurred in operating the farm, the market value of the unpaid labor except that of the operator, and decrease in the inventory values of livestock, feeds, machinery and real estate.

Receipts

Receipts include the amount received from the sale of crops; the amount received from sale of livestock and livestock products plus the amount received from miscellaneous sources; and the amount, if any, that the ending inventory values of livestock, feeds, and supplies exceed the beginning inventory values. Farm privileges are not included.

Farm Income

Farm income is the difference between receipts and expenses. Thus it is the return to capital and the operator's labor and management.

Labor Income

Labor income is the return to the operator for his year's labor and management. It is calculated by subtracting from total receipts the total expenses and interest on investment. (Interest on investment

was calculated at 5 percent of total capital).

Farm Privileges

Farm privileges include the value of commodities produced on the farm and used in the farm home plus an estimated rental value of the farm house for the year.

Labor Earnings

Labor earnings are the sum of the labor income and farm privileges. Unless stated otherwise they are the labor earnings for the entire farm, or what the operator's labor earnings would be if he owned the farm.

Return on Investment

Return on investment is the residual remaining after the value of the operator's labor has been deducted from the farm income.

Acres in Crops

Acres in crops are the acres of land on which crops were grown.

Crop Index

A crop index is the yield of all crops in relation to an arbitrary base. Each crop was weighted by the acres grown and the man-work units required per acre. In this study the base was the average yield of the farms included in this study. The average yields were, therefore, equal to an index of 100.

Productive Man-Work Unit

A productive man-work unit is a measure of the amount of productive work undertaken on the farm for the year. Total productive man-work units are based on the average hours of man labor required to care for an acre of crops or for one head of livestock. Ten hours of labor are

considered the equivalent of one man-work unit. Yields and rates of production are ignored by these calculations (appendix tables 1 and 2).

Animal Unit

An animal unit is a common unit of measure of all kinds of livestock. It is based on the standard of one mature range cow as being equal to one (1) animal unit (appendix table 3).

DESCRIPTION OF FARMS STUDIED

Resources

The average number of acres per farm was 371 (table 3). Seventy-two acres were classed as cropland, of which about 5 acres were not cropped during 1945.

Private grazing lands totaled 284 acres, of which 85 were irrigated pasture. Dry pasture and ranges amounted to 199 acres.

Irrigated cropland was valued at $68 per acre, while the range land was valued at $1.95 per acre. The difference in the value of these can be more fully realized when it is seen that irrigated cropland constitutes 44.4 percent of the total value and only 18.2 percent of the total acres. On the other hand, range lands constituted only 3.2 percent of the total value as against 44.2 percent of the total acres.

The value of all land amounted to $10,124 per farm. Nearly half of the total value was in cropland, and approximately 90 percent of the value was in irrigated land, although just slightly more than 40 percent of the acreage was irrigated.

Table 3. Average Acreage per Farm and Value per Acre of Different Classes of Land

Kind of land	Average acres of land per farm	Value of land per acre	Total value per farm	Percent of total value per farm	Percent of total acres
	acres	dollars	dollars	percent	percent
Irrigated cropland	67.0	68.00	4,492	44.4	18.2
Idle cropland	5.3	48.00	252	2.4	1.4
Irrigated plowable pasture	45.0	55.00	2,511	25.0	12.1
Irrigated non-plowable pasture	40.0	44.00	1.789	17.7	10.8
Dry pasture	35.0	15.00	540	5.3	9.4
Range	164.0	1.95	320	3.2	44.2
Farmstead	2.6	43.00	113	1.1	.8
Grazing permits 1/			21		
Other	11.6	7.00	86	.9	3.1
Total	371.0	27.25	10,124	100.00	100.0

1/ Five farms had grazing permits on public lands totaling $1,002 in value.

The total investment in livestock was $4,109 per farm (table 4). Of this total, about 65 percent was in dairy cattle and 18 percent in beef cattle.

The farms studied averaged 13.1 head of dairy cows and 15.6 head of other dairy cattle per farm.

Beef cattle totaled 10.2 per farm, with 4.1 of these being cows. Of the 49 farms studied, 17 had no beef cattle at all. The average

Table 4. Number and Value of Different Kinds of Livestock per Farm

Kind of livestock	Number	Average value per head	Total value	Percent of capital invested in livestock
	number	dollars	dollars	percent
Dairy cows	13.1	134	1,756	42.7
Other dairy cattle	15.6	58	903	22.1
Beef cows	4.1	91	373	9.1
Other beef cattle	6.1	60	368	8.9
Horses	4.8	76	369	9.0
Sheep	12.6	12	157	3.8
Hogs	3.1	25	79	1.9
Hens	95.0	1	95	2.3
Other chickens	6.4	0.62	4	.1
Other poultry 1/	1.2	3.33	4	.1
Total			4,109	100.0

1/ Includes turkeys, ducks, geese, and guinea hens

number of beef cattle on farms keeping beef was approximately 15.6 head.

The total farm assets were valued at $18,596 per farm (table 5). Land comprised 54.5 percent of the total, and livestock 22.1 percent. Land and livestock combined amounted to about 76 percent of the total capital invested.

The average investment in buildings, including the residence, was $2,402 or 12.9 percent of the total investment. The investment in machinery was $1,641 per farm, and for feed and supplies it was $320 per farm.

Table 5. Average Capital Investment per Farm

Item	Average investment per farm	Percent of total investment
	dollars	percent
Land	10,124	54.5
Livestock	4,109	22.1
Buildings	2,402	12.9
Machinery	1,641	8.8
Feed & supplies	320	1.7
Total	18,596	100.0

Use of Cropland and Crop Yields

On the farms studied, about 67 acres of crops were grown per farm (table 6). Of this total, 26.8 acres or 40.7 percent was alfalfa. Alfalfa plus other hay, which included clover hay, timothy, and grain used as hay, amounted to 70 percent of the crop acreage.

The grains, including corn, wheat, barley and oats, accounted for 17.7 acres of the 67.2 acres of crops grown per farm. The 17.7 acres in grain were 26.5 percent of total as compared to 70.4 percent in hay. Hay and grain totaled 96.9 percent of all crops grown. Corn silage and corn fodder combined averaged only .9 acres per farm or 1.1 percent of the average acreage in crops. The remainder of the acreage was in potatoes, alfalfa seed, clover seed, a small amount of fruit, and a small acreage of field carrots.

Almost all the crops grown yielded less per acre than the long-time

Table 6. Average Acreage of each Crop Grown per Farm, Yields per Acre and State Average Yields

Kind of crop	Average acres per farm	Percentage of total crops grown	Yield per acre	Utah average yield per acre 1926-31
	acres	percent		
Alfalfa hay	26.8	40.7	2.15 tons	2.5
Other hay	19.7	29.7	1.17 tons	1.4
Wheat	5.8	8.7	28.8 bu.	30
Oats	5.8	8.7	37.3 bu.	39
Barley	5.8	8.7	41.4 bu.	41
Potatoes	.4	.5	90.2 bu.	150
Corn silage	.6	.7	9.0 tons	9.2
Corn fodder	.3	.4	8.6 tons	1/
Corn shelled	.3	.4	32.4 bu.	27
Clover seed	.4	.5	313.0 lbs.	1/
Alfalfa seed	.9	1.0	.79 bu.	2.4
Other	.4	--	--	--
Total acres of crops	67.2	100.0	--	--
Double cropping	.2			
Total acres land cropped	67.0			

1/ Data not available

state average yield. Of all crops reported, only barley and corn equaled or exceeded the 1926-1931 state average. Barley produced 41.4 bushels per acre, as compared to 41 bushels for the state.

The acreage of shelled corn was so small (.4 percent of total acres of crops grown) that the yield is not particularly significant.

Alfalfa hay was the major crop in Duchesne county. Yet the yield was only 2.15 tons per acre as compared to 2.5 tons per acre for the state. The .35 ton per acre difference does not seem great, but when multiplied by the number of acres in alfalfa, it makes a significant difference in the amount of hay available for feed or sale.

The state average yield per acre of other hay, 1926-31, was 1.4 tons per acre. The farms studied produced only 1.17 tons per acre, or .23 ton per acre less than the state average.

Wheat and oat production per acre also were below the state average of 30 and 39 bushels per acre, respectively. The average yield of wheat on the farms studied was 28.8 bushels per acre, while the average yield of oats was 37.3 bushels. These two crops were both below state average yields, yet both were important crops.

The low amount of precipitation in Duchesne county in 1945 undoubtedly had some effect in causing the low yields.

Butterfat Production

Among the farms studied, there was considerable variation in the average production of butterfat per cow. The range was from 137 to 413 pounds per cow, with an average of 254 pounds. This variation may be explained largely by the quality of dairy cattle kept and the management and feeding practices.

There were three main breeds of dairy cattle kept on the farms studied. They were the Holstein, Jersey, and Milking Shorthorn. Cows that showed the dominant characteristics of a particular breed were considered to be of that breed. Herds in which the majority of the cows showed the dominant characteristics of a particular breed were considered to be of that breed.

Not only was there considerable variation in the amount of butterfat produced per cow among the farms studied, but data from other sources indicate a high degree of seasonal fluctuation in milk production and deliveries in the county (table 7 and Figure 1). The peak month for milk receipts at Duchesne county milk plants was July. This is the season when the grass is at its best. The January production fell to an extreme low of about 42 percent of the June production.

By comparing the production line (Figure 2) for the Uinta Basin with that of the 49 farms studied, it is seen that the production of the farms studied is not nearly as eratic as for the entire Uinta Basin area.

The cause of the eratic production may be a feed shortage in the winter and an abundance of grass in the spring. Also, it may be most economical to manage the herd so that most cows freshen in the spring. Whatever the cause, production is low in winter and high in late spring and summer (Figure 1). It may even be possible that this seasonal fluctuation in production is the type of production that is most economical in Duchesne county.

Table 7. Monthly and Quarterly Fluctuation in the Quantity of Butterfat Produced or Delivered 1/

Percent of June Production and Receipts			Percent of April to June Quarterly Production and Sales			
Month	Nine State D.H.I.A. Production	Receipts at Uinta Basin Plants	Quarter	Nine State D.H.I.A. Production	Receipts at Uinta Basin Plants	Sales from Farms Studied
April	97.7	60.6				
May	100.7	75.5	First	100.0	100.0	100.0
June	100.0	100.0				
July	91.7	102.0				
August	83.1	89.5	Second	85.0	115.0	108.0
Sept.	78.8	82.3				
Oct.	78.4	75.6				
Nov.	82.1	60.7	Third	83.0	78.0	81.0
Dec.	84.9	56.7				
Jan.	82.6	42.8				
Feb.	89.4	47.5	Fourth	88.0	59.0	79.0
March	89.8	50.8				

1/ Rich, Lyman H. Dairy Production on Utah Farms. Utah State Extension Service N.S. 147. P. 17, January, 1947

Summary of Year's Operation

Receipts. The average farm receipts for the year were $4,641 per farm (table 8). This included crop sales, $267, livestock products sold, $2,571, increase in livestock inventory, $1,441, increase in feed and supplies, $49, and miscellaneous income, $313.

Of the average crop sales per farm, 35 percent was from alfalfa. With other hay included, total hay sales amounted to 40 percent of the total crop sales. Barley was the second crop in importance so far as sales were concerned. Fourteen percent of the income from crop sales was from barley, while the income from wheat amounted to somewhat less.

Figure 1

Monthly Variations in Butterfat Production for Nine Utah DHIA and Butterfat Receipts at Six Uinta Basin Dairy Plants - April, 1944 to March, 1945

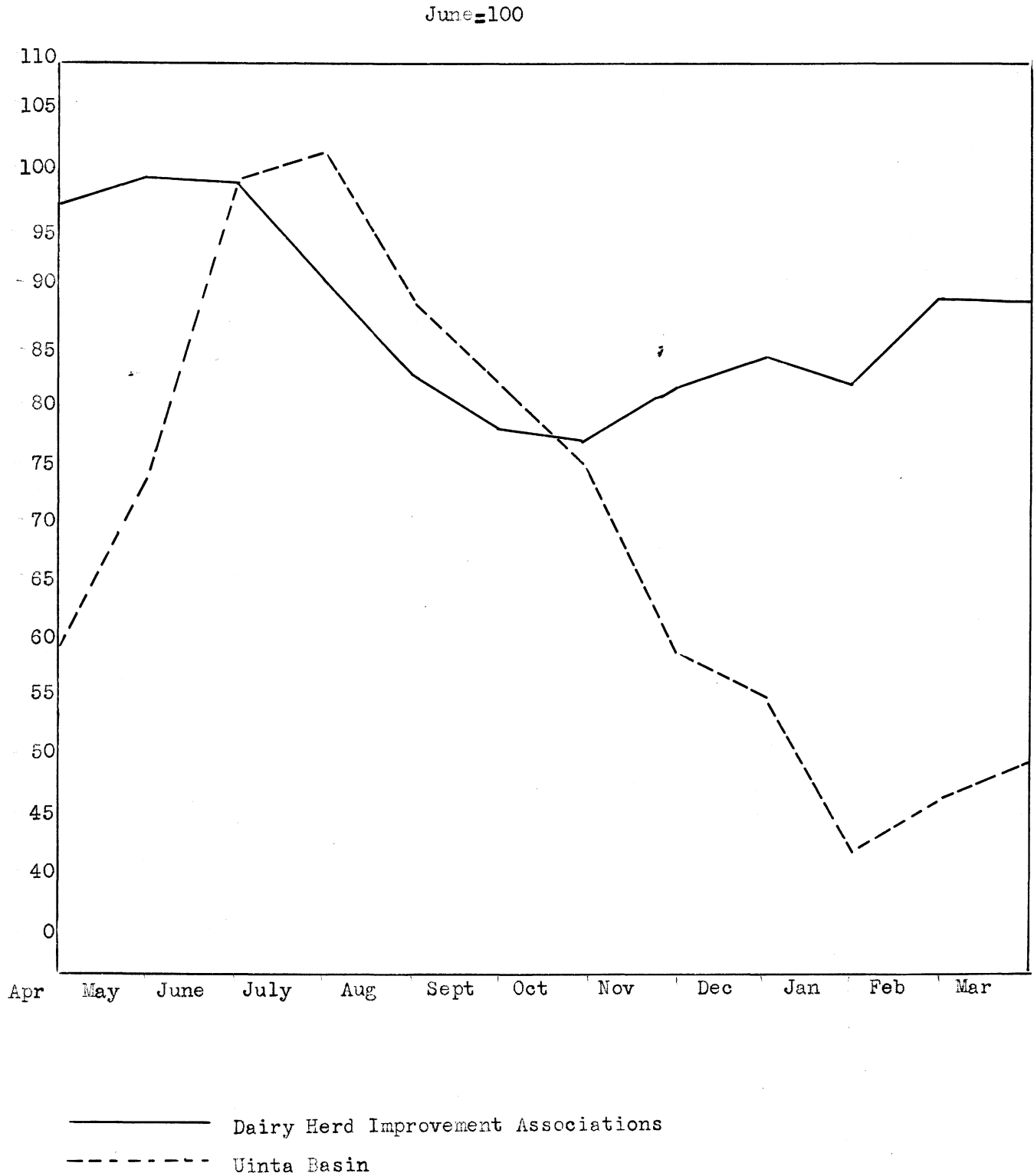

Figure 2

Quarterly Variations in Butterfat Production for Nine Utah DHIA and Butterfat Receipts at Six Uinta Basin Dairy Farms - April, 1944 to March, 1945 and for the 49 Farms Studied
April to June=1st Quarter 1st Quarter=100

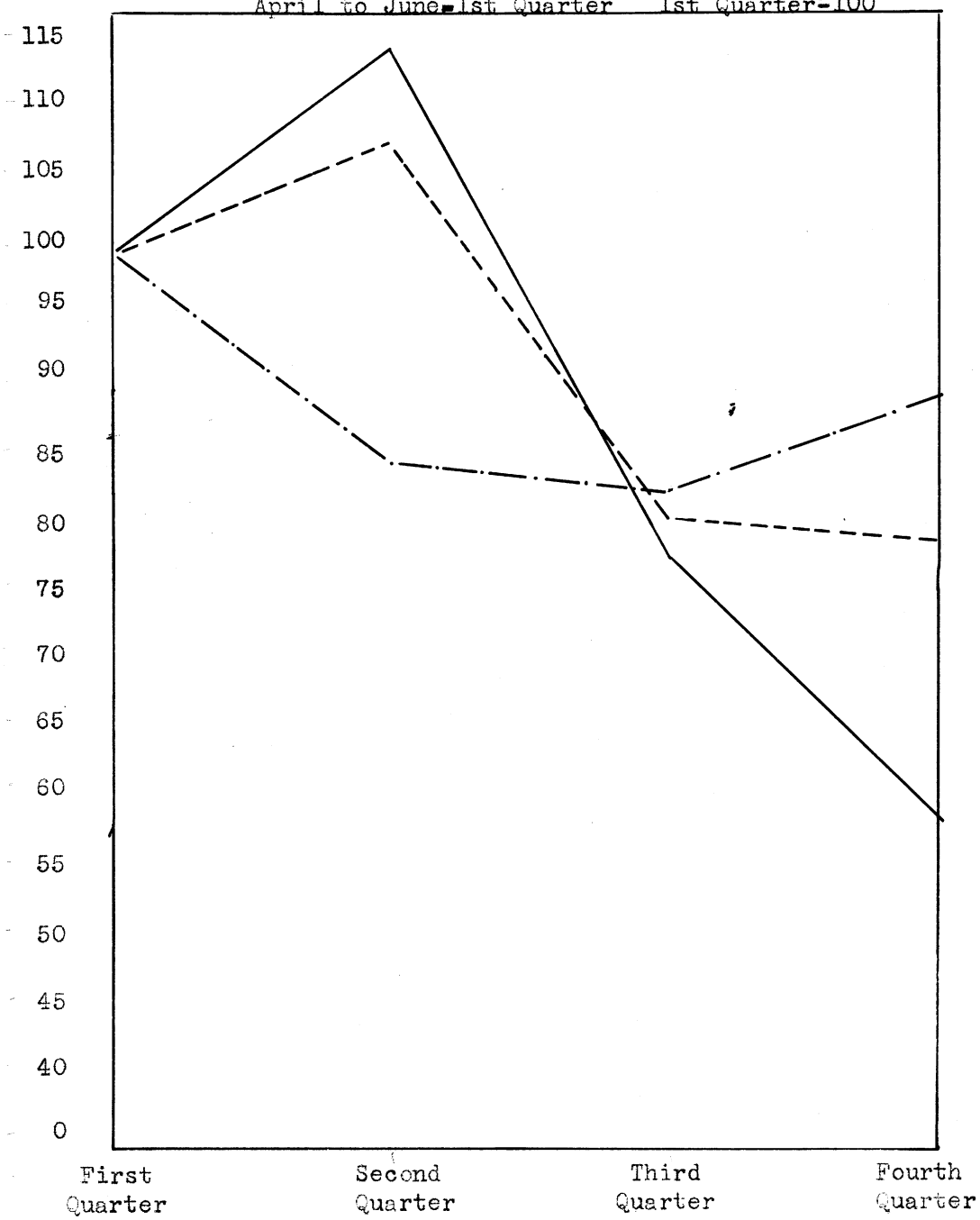

Table 8. Summary of Receipts per Farm

Source of Income	Average per Farm	Percent of Total
	dollars	percent
Crop Sales	267	5.8
Livestock Products	2,571	55.4
Livestock Increase	1,441	31.1
Feed and Supply Increase	49	1.0
Miscellaneous	313	6.7
Total	4,641	100.0

Other crops sold were: oats, alfalfa seed, a small amount of clover seed, and a small amount of fruits and vegetables. In total crop sales amounted to only 5.8 percent of the total receipts.

Livestock products account for 55 percent of the total receipts. Of the 166,071 pounds of butterfat sold from all the farms, 125,579 pounds were sold in the form of whole milk. The remainder was in cream and butter. The sale of other livestock products was small, although a few farms sold considerable eggs.

Miscellaneous income amounted to $313 per farm. This was 6.7 percent of the total income. Government payments amounted to $87 per farm and included the A. A. A. land improvement practices, but not dairy subsidies which are included in sales from livestock products. Receipts from oil leases averaged $65 per farm. Most of the oil leases brought about $0.25 to $0.50 per acre. Man work done off the farm accounted for receipts of about $65 per farm. When this was added to

machine work off the farm, a total of $161 per farm was received.

Expenses. Current cash expenses, which include feed, labor, taxes, cash repairs of machinery, and improvements, etc., amounted to $1,720, or nearly 75 percent of the total expenses (table 9). Among the most important items in current cash expenses were feeds bought, which averaged about 22 percent of the current cash expenses, or $503 per farm.

Table 9. Summary of Expenses per Farm Exclusive of Interest

Nature of expense	Average per farm	Percent of total
	dollars	percent
Current Cash	1,720	73.4
Machinery Decrease	85	3.6
Improvement Decrease	34	1.4
Unpaid Labor	505	21.6
Total	2,344	100.0

This included hay, grain, dried beet pulp, and prepared feeds. Taxes, including water assessments, were $291 per farm. Another major expense was operation of the farm share of the automobile, and the truck and tractor, which combined averaged about $260 per farm. These represent the most important items of expense, but by no means the total expense. Of the remaining cash expense items, hired labor amounted to about $100 per farm, threshing and combining averaged about $50 per farm, and seeds about $65 per farm. Repairs on buildings and machinery were about $60 and $45 respectively.

Although unpaid labor did not have to be met by an immediate cash output as hired labor did, it was still an expense. Unpaid labor amounted to an average of $505 per farm or 21.6 percent of the total expense of the farm.

The decrease in the value of machinery and improvements was only 3.6 percent and 1.4 percent of the total expenses per farm, respectively.

Summary of Financial Success

Farm income. The difference between total receipts and total expenses averaged $2,297 (table 10). After charging interest at 5 percent on the total investment, $1,367 was left as labor income. In addition to the labor income, the farm family enjoyed other privileges such as a house to live in and farm products used in the home. The rental on the house, 10 percent of beginning inventory value, plus the farm produce used in the home totaled $2,040 per farm.

The return to capital was calculated by subtracting the value of the operator's time from the farm income. The average imputed value of the operator's time was $1,487, which left $810, or 4.4 percent, return to capital.

Undoubtedly, one of the chief factors contributing to the relatively high labor earnings was the favorable price level of the war period. The index of prices received by Utah farmers for 1945 was 200 when the average price level of 1935 to 1939 equals 100 and is used as the base period.

Table 10. Financial Summary of Year's Operation

Item	Average per Farm
	dollars
Receipts	4,641
Expenses	2,344
Farm income	2,297
Interest on Capital	930
Labor income	1,367
Value of farm privileges	673
Labor earnings	2,040
Value of operator's time	1,487
Return of capital	810
Percent return on capital	4.4 percent

FACTORS AFFECTING THE FINANCIAL SUCCESS OF THE FARM BUSINESS

The material presented so far has been descriptive of the area in which the farms are located as well as descriptive of the organization of the farms, the yields, receipts, expenses and financial success of the farms. Although the average of all farms showed a reasonably successful year of operation, some individual farms ranged a considerable distance both sides of the average labor earnings of $2,040 (table 11). The lowest labor earnings recorded were $327, with a negative return on capital of 6 percent. The farm reporting largest labor earnings had

$4,057, with 11.3 percent return on capital.

Undoubtedly, some of this variation resulted from chance or from factors that cannot be isolated and measured. But some of the variations could certainly have resulted from factors such as size of business, quality of land, rates of production, labor efficiency and others which can within certain indefinite limits be controlled by the individual farmer. It is the purpose of this section to show the effect that selected factors had upon the financial success of the farms studied.

Table 11. Frequency Distribution of Labor Earnings

Class interval in dollars	Number of farms in each class frequency
0-499	1
500-999	4
1000-1499	7
1500-1999	11
2000-2499	12
2500-2999	8
3000-3499	4
3500-3999	1
4000-4499	1
Total	49

Size of business

Size of the farm business was an important factor affecting the financial success of these farms. There have been several measures of size devised, three of which are used in this study. The relation of these three, namely, acres in crops, number of dairy cows, and productive

man-work units, to financial success of the farms studied is shown.

Acres in crops. Since the acres in crops does not include livestock, differences in the kind of crops grown, or other economic activities, it is not always good measure of size of farm business. However, in an area with a given type of farming such as occurs in Duchesne county, it is reasonably satisfactory.

The records were divided into three equal groups according to the acres of land in crops (table 12). The smallest farms averaged 37 acres of crops per farm, with labor earnings of $1,846. The medium size farms had 62 acres of crops and $1,976 in labor earnings. Labor earnings amounted to $2,310 on the largest farms, with an average of 104 acres of crops. With an increase of 67 acres in the average size, the largest farms increased their labor earnings $464 over the small farms. Labor earnings tended to increase as the number of acres in crops increased.

The number of dairy cows kept per farm also increased as the acres in crops increased. The smallest farms had 11.9 cows per farm, while the largest farms had 14.7 cows per farm. However, this increase is only 2.8 cows, and is not large enough to be significantly important.

More important than number of dairy cows is the increase in animal units. The smallest farms had a total of 29.9 animal units per farm, as compared with 59.6 animal units on the largest farms, or a difference of 29.7 animal units per farm. Dairy cows accounted for only about 3.5 of the 29.7 animal units. The difference of 26.2 animal units was then accounted for in livestock other than dairy cows.

Table 12. Relation of acres in crops to labor earnings and other factors

Item	Small farms	Medium farms	Large farms	Total or average
No. of records	17	16	16	49
Average acres in crops 1/	37	62	104	67
Animal units	29.9	36.8	59.6	41.8
Number of dairy cows	11.9	12.8	14.7	13.1
Percent of receipts from dairy	71	58	58	61
Productive man-work units per man	269	303	380	310
Pounds butterfat per cow	262	247	250	254
Crop index	107	100	92	100
Percent return on investment	3.4	3.9	5.2	4.4
Labor earnings (dollars)	1,846	1,976	2,310	2,040

1/ Acres planted

Quite significant is the percentage of receipts from the dairy enterprises. The smallest farms received 71 percent of their receipts from dairy enterprises while the largest farms received only 58 percent of their receipts from dairy, yet the latter had the largest labor earning. This means that the largest farms are receiving a substantial portion of their income from sources other than dairying.

Production of butterfat per cow could not have accounted for the increased labor earnings since the smallest farms had the largest production per cow. The difference in production between the small farms and the large farms was not very pronounced, being 12 pounds of butterfat per cow.

There was a marked relationship between labor efficiency and acres in crops. Productive man-work units per man rose from 269 on the smallest

farms to 380 on the largest farms, or an increase of 111. Of course, some of this labor efficiency on the large farms was undoubtedly caused by poorer yields. It is an established fact that less labor is required to care for certain poor crops than for good ones. The reverse relationship of the crop yield index to the acres in crops indicates that the relationship between the acres in crops and true efficiency in the use of labor is less than that which seems apparent. The crop index fell from 107 on the small farms to 92 on the large farms. However, there was still a net gain in the efficiency with which new labor was used.

Number of dairy cows. When the records were sorted on the basis of number of dairy cows and the number of dairy cows were related to labor earnings and other factors, there was no apparent consistent trend in the relationship (table 13). Farms with the fewest cows, an average of 9.3 per farm, had labor earnings of $1,909. When there were 12.8 dairy cows per farm, the labor earnings were $2,122. But with 19.2 cows per farm, the labor earnings were only $2,095. It is possible that with a larger number of records to work with and data covering a longer period of time, a more consistent relationship could be obtained. Also it is probable that other enterprises affected earnings to the extent that the relation of the number of dairy cows to labor earnings was obscured.

The number of dairy cows showed a relationship to acres in crops. That is, as the number of cows per farm were increased, the acres of crops

Table 13. Relation of Number of Dairy Cows to Labor Earnings and Other Factors

No. of dairy cows		Number of records	Acres in crops	Butterfat per cow	Percent of receipts from dairy	Productive man-work units	Productive man-work units per man	Labor earnings
Range	Ave.							
No.	No.	No.	A.	Lbs.	%	No.	No.	Dol.
Less than 11	9.3	17	56	254	62	339	289	1,909
11-14	12.8	18	65	254	63	438	311	2,122
More than 14	19.2	14	83	253	72	560	336	2,095
Ave.	13.1	49	67	254	66	439	310	2,040

grown increased. As could be expected, with the increase of dairy cows per farm, the percent of receipts from dairy also increased. But pounds of butterfat produced per cow remained essentially constant. With the increase in size of the dairy herd as measured by number of dairy cows total productive man-work units on the farm increased to a greater extent than did dairy cows.

Labor efficiency improved as the size of the farm business increased. With an average of 9.3 dairy cows per farm there was a total of 289 productive man-work units per man. When the number of dairy cows was increased to 19.2 per farm, there was a total of 560 productive man-work units per farm, with 336 productive man-work units per man.

Productive man-work units. A measure of size of farm business

which is often better than either acres of crops grown or number of dairy cows is the total productive man-work units. This not only includes crops, livestock and other economic activity, but rates them according to the amount of man labor required.

The records were sorted as nearly as possible into three equal groups: small farms with lowest number of productive man-work units per farm, medium size farms, and large farms with the most productive man-work units per farm (table 14). The smallest farm group averaged about 295 productive man-work units, while the largest farms averaged 588.

When productive man-work units were related to labor earnings, it was found that a slight tendency existed for labor earnings to increase with an increase in productive man-work units. Labor earnings on the small farms were $1,922, while the large farms had labor earnings of $2,148, an increase of $226.

As productive man-work units increased, the percent of productive man-work units in the dairy enterprise decreased in rather marked proportions. On the smallest farms 65 percent of the productive man-work units were in dairy, while only 51 percent were in dairy on the large farms. This reveals a tendency for the small farms to intensify their operations by spending more productive time on the dairy enterprises. The smallest farms had 165 man-work units per farm in dairy cows, which is 56 percent of the 295 productive man-work units per farm. The large farms had 256 man-work units per farm in dairy cows,

which equals 44 percent of the total productive man-work units. The large farms had more dairy cows per farm, but in relation to total productive labor they had less. In other words, the large farms had a greater portion of their productive labor devoted to other enterprises which were influencing the labor earnings of the farm.

This is indicated again by the relation of productive man-work units to acres in crops. The large farms had twice as many acres in crops as the small farms. (The relation of acres in crops to labor earnings has been shown in table 12, page 21). Again, in animal units per farm the large farms had twice as many as the small farms had. Also, the large farms had twice as many productive man-work units as the small farms had. Only about 7.4 of the animal units are accounted for in the additional dairy cows on the farms. This is an indication that other livestock are an important enterprise on the large farms.

The large farms tended to use relatively less labor than did the small farms when measured by man-work units per man. When the average productive man-work units per farm were increased from 295 to 588, productive man-work units per man increased from 258 to 334. This is an increase of 76 man-work units per man on the large farms. But, measuring labor efficiency by man-work units per man does not consider yields. It is possible that lower yields affected the number of man-work units accomplished per man.

Rates of Production

Butterfat Per Cow. For the farms studied butterfat production per cow ranged from 137 pounds to 413 pounds. The average for all cows

Table 14. Relation of Number of Productive Man-Work Units Per Farm to Labor Earnings and Other Factors

Item	Small Farms	Medium Farms	Large Farms	All Farms
Number of records	16	16	17	49
Average productive man-work units per farm	295	425	588	439
Percent of productive man-work units in dairy	65	57	51	56
Productive man-work units in dairy cows (number)	165	208	256	210
Acres in crops	44	67	89	67
Animal units (number)	28	42	56	42
Productive man-work units per man (number)	258	322	334	310
Total investment	$ 11,095	$ 19,122	$ 25,100	$ 18,596
Percent return to capital	4.2	4.2	4.5	4.4
Labor earnings	$ 1,922	$ 2,043	$ 2,148	$ 2,040

was 254 pounds. To show the association between production per cow and profits, the records were sorted into three groups on the basis of butterfat produced per cow. The averages were 195, 255, and 321 pounds per cow for the low, medium, and high production groups, respectively (table 15).

Although there existed a positive relationship between pounds of butterfat produced per cow and receipts from dairy, there was little association between production per cow and labor earnings.

Table 15. Relation of Pounds of Butterfat Produced Per Cow to Labor Earnings and Other Factors

Butterfat produced per cow		Number of Records	Percent Receipts from dairy	Man-work units	Price received per lb. butterfat sold 1/	Percent returned to capital	Labor Earnings
Range	Average						
Lbs.	Lbs.	No.	%	No.	Dol.	%	Dol.
Less than 230	195	17	56	478	.728	3.4	1,918
230-284	255	17	66	389	.755	5.2	2,140
285 or more	321	15	76	451	.780	4.4	2,065
Total	254	49	65.5	439	.753	4.4	2,040

1/ This price includes government subsidies

The positive association between butterfat production per cow and the percent of receipts from dairy indicates that farms with the highest production per cow derived a larger proportion of the income from the dairy herd.

Where butterfat per cow was highest, the prices received for butterfat sold were highest. This may be explained in part by the type of product sold. Homemade butter brought the lowest prices of any form of butterfat sold. Prices received for butterfat sold in cream were higher than from butter, but whole milk brought the highest prices of all. The farms on which more emphasis was placed in the dairying enterprise had a tendency toward higher butterfat production

per cow. It is natural that these farmers would seek out the better methods of marketing their products.

Crop yield index. The crop yield index, as used in this study, measures the physical productivity per acre of crops, compared to the average of the farms studied. By sorting the records on the basis of crop index and then calculating the average labor earnings, the relationship of crop yields and financial success was established.

Average labor earnings on farms with a crop index of 90 or less were $1,694, while they were $2,303 on farms with an index of 104 or more (table 16). This was in spite of the fact that the farms with the lowest crop index had slightly more acres in crops than the farms with the highest crop index. Total animal units as well as total productive man-work units indicated a close relationship to the crop index, showing that the farm with the better crop yields had a tendency to keep more livestock as well as a tendency to be larger in productive units.

When the crop index was related to productive man-work units per man, it was found that an inverse relationship existed. As the average of the crop indexes increased from 75 to 125, productive man-work units per man decreased from 318 to 301, indicating that as crop yields went up, labor efficiency as measured by productive man-work units went down. It must be remembered that with some crops poor yields can be cared for with less labor than can good yields.

Table 16. Relation of Crop Yield Index to Labor Earnings and Other Factors

Crop yield index		Number of records	Productive man work units per man	Total animal units	Acres in crops	Total productive man work units	Butterfat per cow	Percent return on capital	Labor earnings
Range	Ave.								
%	%	No.	No.	No.	Acres	No.	Lbs.	%	Dol.
90 or less	75	15	318	35	69	406	250	2.3	1,694
91-103	95	17	313	42	69	434	273	4.6	2,083
104 or more	125	17	301	48	64	472	238	5.5	2,303
Total	100	49	311	42	67	439	254	4.4	2,040

Man-Work Units per Man

Unlike many of the farm expenses, the cost of man labor is not a fixed amount and, therefore, offers the best opportunity for controlling and reducing expenses. The efficiency with which man labor was utilized was associated positively with labor earnings although the relationship was not entirely consistent (table 17).

As the number of man-work units accomplished per worker increased, labor earnings increased. Farms on which the workers accomplished an average of 243 man-work units per man had average labor earnings of $1,870. Labor earnings were $2,478 for the farms with average man-work units per man of 377. But, as labor efficiency was closely associated with size of farms, much of the increased labor earnings may be attributed to size of the farm business instead of to labor

Table 17. Relation of Man-Work Units per Man to Labor Earnings and Other Factors

Man-work units per man		Number of records	Expense	Receipts	Farm income	Man equivalent	Lbs. of B. F. produced per cow	Crop index	Productive man-work units	Labor earnings
Range	Ave.	No.	Dol.	Dol.	Dol.	No.	Lbs.		No.	Dol.
Less than 286	243	16	1,878	3,815	1,937	1.36	262	104	326	1,870
286-639	313	17	2,327	4,424	2,097	1.41	237	104	444	1,789
340 or more	377	16	3.052	5,920	2,868	1.46	264	91	545	2,478
Total	310	49	2,417	4,714	2,297	1.4	254	100	438.6	2,040

efficiency. However, it is important to note that farms with the highest labor efficiency not only were larger, but used only very little more labor. Small farms with less than 286 man-work units per man used 1.36 man equivalents, while farms with an average of 340 man-work units per man used only 1.46 man equivalents.

Price Received Per Pound of Butterfat Sold

In general, three different kinds of dairy products were sold by Duchesne County farmers (table 18). The least profitable product was homemade butter. Farm butter sold for about 40 cents per pound butterfat, while those who separated the cream from the milk and sold the cream received about 50 cents per pound butterfat. Farmers who sold whole milk locally received about 62 cents per pound butterfat. These prices do not include subsidy payments. The average prices received by the different farmers were not as clear-cut as those indicated by the above prices as there often was an intermingling of all three prices. Most farmers sold some whole milk. Several farmers sold farm butter, cream, and whole milk sometime during the year, but seldom all three in the same three-month period.

Toward the end of the season, increased competition among the dairy manufacturers, in addition to other economic factors, forced the price of butterfat up about 10 cents per pound. The highest prices were received by those who produced market milk.

The records were sorted into three groups according to the price received per pound of butterfat sold. The farms that received less than

76 cents per pound received $1,814 in labor earnings. The farms that received 78 cents or more per pound had labor earnings of $2,098. It is probable that other enterprises affected labor earnings in such a manner as to cause the inconsistency shown.

Table 18. Relation of Price Received per Pound Butterfat Sold to Labor Earnings and Other Factors

Price received per Pound butterfat 1/ Range:	Ave.	No. of records	Productive man-work units per farm	Butterfat produced per cow	Labor earnings
Dol.	Dol.	No.	No.	Lbs.	Dol.
Less than .76	.697	17	426	251	1,814
.76 to .779	.765	17	434	233	2,215
78 and more	.804	15	458	282	2,098
Total	.754	49	439	254	2,040

1/ Includes government subsidies

Combination of Enterprises

One of the most difficult problems confronting the farm operator is the selection of farm enterprises, and the determination of the proportion of the farm resources to be assigned to each enterprise. Within limits, the farm resources available determine the enterprises on the farm and to a lesser extent the proportion each occupies on the farm. Also, within the limits set by the farm resources, the operator has considerable opportunity for choice. All farmers would not make the same choice nor would all choices be equally profitable. The

problem is to make an enterprise choice that will result in the greatest profit over a period of years.

Percent of productive man-work units in dairy. There was a marked inverse relationship between thepercent of productive man-work units in dairy and labor earnings (table 19). As man work units increased from an average of 44 percent in dairy to 71 percent, labor earnings decreased from $2,440 to $1,751. The farms with the least man-work units in dairy had the largest sized farms when measured by total productive man-work units. The average man-work units in beef cattle and sheep declined as the percent of man-work units in dairy increased. This indicates a tendency for the large farms to keep greater numbers of livestock other than dairy cattle than did the small farms.

Percent of receipts from dairy. After sorting the records into three groups it was found that a pronounced inverse relationship existed between percent of receipts from dairy and labor earnings. That is, as the percent of receipts from dairy increased, labor earnings decreased (table 20).

Farms that had less than 58 percent of their receipts from dairy received the highest labor earnings. They had average labor earnings of $2,318 or $578 more than the group of farms that averaged 85 percent receipts from dairy.

Productive man-work units in beef and sheep. There have been several references made to the importance of enterprises other than

Table 19. Relation of Percent of Productive Man-Work Units in Dairy to Labor Earnings and Other Factors

Percent of man-work units in dairy		Number of records	Total Productive man-work units	Man-work units in dairy	Man-work units in beef and sheep	Labor earnings
Range	Ave.					
%	%	No.	No.	No.	No.	Dol.
Less than 53	44	17	523	233	36	2,440
53-62	58	16	436	251	19	1,904
63 or more	71	16	350	251	4	1,751
Ave.	58	49	439	245	20	2,040

dairying affecting labor earnings. One of the more important enterprises mentioned was other livestock. Twenty-eight of the farms had considerable numbers of beef cattle or sheep. The records were sorted into three groups on the basis of percent of total man-work units in beef and sheep combined (table 21). Out of the 49 records there were 21 that had no beef or sheep. There were 13 farms with less than 5 percent of the productive man-work units on the farm in beef cattle and sheep. Fifteen of the farms had 5 percent or more of the productive man-work units in beef and sheep.

The farms with no beef or sheep on them had labor earnings of $1,651, while those with 5 percent and over of their productive man-work units in beef and sheep had labor earnings of $2,362 or $711 more than the others. But the difference between the group which had less

than 5 percent man-work units in beef and sheep and the one with 5 percent or more man-work units in beef and sheep was less prounounced. The increase from $1,651 in labor earnings to $2,298 is hardly attributable to 1.4 percent man-work units in beef and sheep. Part of the difference may result from the difference in the average size of the groups. Undoubtedly, there were factors operating other than beef and sheep.

Table 20. Relation of Percent of Receipts from Dairy to Labor Earnings and Other Factors

Percent of receipts from dairy		Number of records	Number of dairy cows	Percent man-work units in dairy	Total man-work units	Butter-fat produced per cow	Labor earnings
Range	Ave.						
%	%	No.	No.	%	No.	Lbs.	Dol.
Less than 58	42	16	11.8	44	493	227	2,318
58-74.9	65	17	13.5	58	453	249	2,016
75 or more	85	16	14.0	67	370	287	1,740
Total	66	49	13.1	56	439	254	2,040

There was a close relationship between the percent of productive man-work units in beef and sheep and the percent of receipts from beef and sheep. Of course, with no beef and sheep, there could be no receipts. But with 5 or more percent of the man-work units in beef and sheep, the percent of receipts increased to 21.6 percent of the total receipts. Quite naturally the percent of receipts from dairy decreased from 75.7 to 50.0 with an average for all farms of 66 percent.

The beef and sheep enterprises tended to concentrate on the larger farms. Farms with 5 percent and more of the man-work units in beef and sheep had 520 total productive man-work units or 156 more man-work units than the farms with no beef or sheep on them. The tendency for the smallest farms to intensify by use of dairy is again seen by the high percentage of returns from dairy and by high percentage of man-work units in dairy. On farms with no beef or sheep, there were 232 man-work units in dairy, which is 64 percent of the 365 total productive man-work units on the farms. For farms with 5 percent or more man-work units in beef and sheep, the percentage of man-work units in dairy was only 50 although the total number of man-work units in dairy was larger than for the group of farms averaging 64 percent in dairy.

Since both total productive man-work units and labor earnings increase simultaneously as percentage of man-work units in beef and sheep increase, it is difficult to separate them. The effect of size of farm was eliminated by dividing the records into two groups (table 22). The two groups were: farms with less than an average of 439 productive man-work units and farms with 439 or more productive man-work units. In the less than 439 man-work units class were 17 of the 21 farms which had no beef or sheep. These farms had average labor earnings of $1,761. Also in this size class were eight farms which had either beef or sheep, and these had average labor earnings of $2,230 per farm.

Table 21. Relation of Percent of Productive Man-Work Units in Beef and Sheep to Labor Earnings and Other Factors

Percent man-work units in beef & sheep		Number of records	Total man-work units	Percent of receipts from beef & sheep	Percent receipts from dairy	Man-work units in dairy	Labor Earnings
Range	Ave.						
Percent	Percent	No.	No.	Percent	Percent	No.	Dol.
None	0	21	365	0	75.7	232	1,651
Less than 5	1.4	13	465	5.4	63.4	240	2,298
5 & over	11.4	15	520	21.6	50.0	263	2,362
Total	8.2	49	439	10.0	66.0	244.0	2,040

The second group of farms, or those with 439 or more productive man-work units, contained 24 farms, of which 11 had less than 3 percent man-work units in beef and sheep, and 13 farms with 3 percent or more. The farms with less than 3 percent of total man-work units in beef and sheep had labor earnings of $1,789. But, the large farms with 3 percent or more of the total man-work units in beef and sheep had labor earnings of $2,497.

In both groups, the farms with the most productive man-work units in beef and sheep had the largest labor earnings.

Factors Better Than Average

Profit is the resultant of the effect of a number of factors. Usually, all factors involved are not equally important, yet it is desirable to utilize and improve upon the important ones while not ignoring the others. In fact, the improvement on some, while others are ignored, may result in decreased profits. The more factors that

can be kept better than average, the greater the possibility for success.

Table 22. Relation of Percent of Productive Man-Work Units in Beef and Sheep to Labor Earning with Size of Business Eliminated

Percent of man-work units in beef and sheep		No. of records	Labor earnings
Range	Average		
percent	percent	No.	dol.
Less than 439 productive man-work units			
0	0	17	1,761
More than 0	9.5	8	2,230
Average	4.7	25	1,913
439 or more productive man-work units			
Less than 3	.19	11	1,789
3 or more	9.7	13	2,497
Average	5.7	24	2,172
All farms	8.2	49	2,040

Each of the 49 records studied was rated on the basis of the number or factors out of six that were better than average (table 23). No attention was paid as to which of the six were better. Of the 49 records, one was below average in all six factors, while there were none better than average in all six factors and six farms were better than average in five factors. The labor earnings for the farm below average in all factors were $1,768, while the average labor earnings of the six farms with five factors better than average were $3,010.

The relationship between the number of factors better than average and labor earnings was not entirely consistent in the two or less better than average groups, but there was a close relationship between the factors better than average and labor earnings when there were

three or more factors better than average. As the number of factors better than average increased, labor earnings increased.

It is important to note that labor earnings did not reach the average of $2,040 until three factors were better than average. Also, labor earnings did not increase rapidly until five factors were better than average. The farms with five factors better than average had labor earnings considerably above average.

Table 23. Relation of Number of Factors Better than Average to Labor Earnings 1/

Number of factors better than average	Number of records	Average labor earnings
no.	no.	dol.
0	1	1,768
1	9	1,739
2	11	1,643
3	12	2,148
4	10	2,164
5	6	3,010
6	0	--
Total	49	2,040

1/ Factors better than average used were: butterfat per cow, crop index, productive man-work units per man, total productive man-work units on farm, price received per pound of butterfat sold and percent man-work units in beef and sheep.

Comparison of Factors for Least and Most Profitable Farms

In summarizing the factors that affected the financial success of the Duchesne county farms in this study, the records were divided into three groups on the basis of labor earnings (table 24). The

difference in the value of the factors listed should not be construed to mean that those factors are necessarily responsible for the difference in labor earnings. The comparison does give an indication of how the various factors are associated with profits.

Table 24. Comparison of Some Factors That Affect Labor Earnings for the Least and Most Profitable Farms 1/

Factors	Average of most profitable 16 farms	Average of least profitable 16 farms	Average of all 49 farms
Labor earnings (dol.)	2,930	1,168	2,040
Labor income (dol.)	2,163	510	1,367
Percent return on capital (percent)	8.0	0	4.4
Total productive man-work units	501	434	439
Number of dairy cows	13.4	14.0	13.1
Capital invested (dol.)	22,340	19,207	18,596
Rate of capital turnover (years)	3.6	4.6	3.9
Crop index (percent)	108	92	100
Butterfat per cow (lbs.)	258	254	254
Percent receipt from dairy (percent)	51	72	65.5
Man-work units in dairy (percent)	50	58	56.0
Productive man-work units per man	326	287	310.5
Expenses per man-work unit (dol.)	5.81	6.18	5.50
Receipts per man-work unit (dol.)	12.36	9.58	10.73
Animal units	56.5	33.9	41.8
Acres in crops	79	62	67

1/ Labor earnings was used as the basis to determine profitableness.

A comparison of the averages for the least profitable and the most profitable farms show that the most profitable farms (1) were larger in size when rated by total productive man-work units; (2) were larger in size when rated by total capital invested; (3) had higher crop yields; (4) had about the same butterfat production per

cow; (5) received smaller percentage of receipts from the dairy enterprise; (6) had smaller percentage of man-work units in the dairy enterprise; (7) had higher labor efficiency; (8) had more animal units; (9) had larger acreage in crops; (10) had larger receipts per productive man-work unit; (11) had lower expenses per productive man-work unit.

SUMMARY AND CONCLUSIONS

In this study of dairy farms in Duchesne county, the financial success of the farms was measured by labor earnings. Several factors that can be more or less controlled by the farmer and that can be measured or studied were related to labor earnings.

Labor earnings tended to increase as rates of production increased on all farms. Generally, high rates of production were most profitable, but the analysis showed that high crop yields were especially profitable.

High labor efficiency tended to be associated with large labor earnings. As labor efficiency increased, labor earnings increased. But, since size of business was also associated with labor efficiency, it is difficult to say which influenced labor earnings the most.

The average price received for butterfat sold was $0.754 per pound. The larger farms tended to sell more whole milk which resulted in prices somewhat higher than those received by the farmers on the smaller farms. The difference in the prices received, between the larger and the smaller farms, was the difference in the price

of whole milk and cream. The farms which sold cream received less than those which sold whole milk.

The combination of enterprises as measured by the proportion of man-work units in the dairy and beef cattle and sheep enterprises was related to labor earnings. The data indicate that farms which had a combination of several important enterprises had larger labor earnings than farms with a high degree of specialization in the dairy enterprise. The farms which had an average of 11 percent productive man-work units in beef and sheep had labor earnings of$2,362. Fifty percent of the receipts of the above farms were from dairy. Farms with no beef or sheep had $1,651 labor earnings with 76 percent of their receipts from dairy.

Average labor earnings tended to increase with the increase in the number of factors better than average. There was a slight decrease in average labor earnings when the number of factors better than average was increased from zero to two. When three and four factors were better than average, labor earnings increased slightly above the average. But, when five factors were better than average, labor earnings increased considerably above average. The more factors above two that were kept better than average, the larger were the labor earnings.

When the most and least profitable farms were compared, it was found that the most profitable farms were larger in size when rated by total productive man-work units, total animal units on the farm, and total capital invested. The most profitable farms also had higher

labor efficiency. Higher rates of production were on the most profitable farms. The average number of dairy cows, productive man-work units in dairy, and the percent of receipts from dairy were less on the most profitable farms than they were on the least profitable farms.

It is evident that the most profitable farm organization was one on which there was a combination of enterprises. These enterprises, in addition to dairying, were mainly beef and sheep and crops.

It must be remembered that the year of 1945 this study covered was one in which favorable price relationships existed. With governmental price supports and subsidies taken away, the financial success of the various enterprises could be greatly altered.

APPENDIX

Appendix Table 1. Productive Man-Work Units Per Acre 1/

Item	
Hay 1/	
Alfalfa (3 cuts)	2.4
Other tame hay	.8
Wild hay	.8
Grain	
Wheat, barley, oats	3.0
Corn	8.0
Alfalfa seed	1.0
Potatoes	11.0
Corn Silage 2/	6.0
Clover seed 3/	1.0
Corn Fodder 4/	6.0

1/ Fuhriman, W. U. Some trends in Utah's agriculture. Utah Agr. Exp. Sta. Bul. 286. Jan. 1939.

2/ Broadbent, Dee A., and others. Labor required to meet 1943 agricultural production goals in Utah. Utah Agr. Exp. Sta. Mimeo. 291. 1943.

3/ Assigned same as alfalfa seed

4/ Assigned same as silage

Appendix Table 2. Productive Man-Work Units per Head of Livestock 1/

Kind of Livestock	Productive Man-Work Units per Head
Dairy cows	16
Dairy heifers over 1 year	2
Dairy Heifers under 1 year	2
Dairy Bulls	5
Beef cattle (farm)	2
Beef cattle (range)	.8
Beef cattle (fattening)	1.2
Sheep (farm)	.6
Sheep (range)	.5
Colts	3
Hogs	3
Hens	.15
Pullets raised	.05
Turkeys, ducks, geese and guineas	.18

1/ Fuhriman, W. U. Some trends in Utah's agriculture. Utah Agr. Exp. Sta. Bul. 286. Jan. 1939.

Appendix Table 3. Basis Used for Calculating Animal Units 1/

Kind of Animal	No. Animal Units
Dairy cows	1.25
Dairy heifers over 1 year	.7
Dairy heifers under 1 year	.4
Dairy bulls	1.25
Beef cows	1.00
Beef Heifers over 1 year	.6
Beef steers over 1 year	.7
Beef steers & heifers under 1 year	.4
Beef bulls	1.25
Sheep	.2
Horses	1.0
Colts	.5
Sows	.25
Other hogs	.15
Hens	.01
Male chickens raised	.01
Turkeys, ducks, geese, and guinea hens	.015

1/ Fuhriman, W. U. Some trends in Utah's agriculture. Utah Agr. Exp. Sta. Bul. 286.

LIST OF LITERATURE CITED

Agricultural Yearbook. Climate and men. United States Department of Agriculture. Washington, D. C. 1941.

Blanch, G. T. A study of farm organization by types of farms in Uinta Basin. Logan, Utah, Utah Agricultural Experiment Station Bulletin 285. January 1939.

Broadbent, Dee and others. Labor required to meet 1943 agricultural production goals in Utah. Logan, Utah, Utah Agricultural Experiment Station mimeograph series 291. 1943.

Fuhriman, W. U. Some trends in Utah's agriculture. Logan, Utah, Utah Agricultural Experiment Station Bulletin 286. January 1939.

United States Census of Agriculture. United States Department of Agriculture. 1940 and 1945.

United States Weather Bureau. Climatological data, Utah section. United States Department of Commerce. Salt Lake City, Utah. 1945.