AN ECONOMIC STUDY OF 128 DAIRY FARMS ON THE UPPER EASTERN SHORE OF MARYLAND

by
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TABLES

FIGURES

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INTRODUCTION

This study analyzes the second year's survey of 128 dairy farms, representative of the dairy industry on the Upper Eastern Shore of Maryland. This area, which includes Cecil, Kent, Queen Anne's, Talbot, and Caroline counties, is a part of the Philadelphia Milk Shed.

Purpose of Study

The purpose of this study is to determine the organization and operation of Upper Eastern Shore dairy farms. The factors affecting farm profits will be isolated and evaluated to show their influence on efficiency of production and organization. Due regard will be given all factors affecting farm profits to insure a minimum of error.

It is a further purpose of this study to analyze the tenancy problem and prescribe a more equitable agreement between landlords and tenants on dairy farms in this area.

Method of Procedure

Farm accounts were used in collecting data for this study. The writer made personal visits to each of the 128 dairy farms in the summer of 1937 and recorded the data as given by the farmer on business analysis survey blanks furnished by the United States Department of Agriculture. All information collected was for the calendar year 1936. Soil conserving payments were not included in 1935, therefore, they were excluded in

this study in order to make the comparisons comparable.

Milk shipments by months for the 68 farms shipping to Supplee-Wills-Jones and Abbotts Dairies were obtained from the Interstate Milk Producers Cooperative, Inc.; the milk sales for these shipments were obtained directly from Supplee-Wills-Jones and Abbotts Dairies. On the remaining 60 farms it was necessary to obtain the estimated milk shipments and milk sales directly from the farmers.

Area of Study

The farms used in this study were chosen as representative of the entire area. The majority of the records were taken in Kent and Queen Anne's counties, as shown in Table 1 and Figure 1. Of the 128 farms surveyed, 55 were tenant and 73 were owner-operated. This area is part of the Philadelphia Milk Shed and practically all of the milk is marketed at Philadelphia. The principal dairies, to which the milk is shipped, are Supplee-Wills-Jones, Abbotts and Haribisons.

PHYSICAL FACTORS AFFECTING PRODUCTION

Physical factors of production over which man has very little control are climate, land relief, type of soils, and natural vegetation. A brief discussion of these factors follows.

Climate and Land Relief

The climate of the Upper Eastern Shore Area is oceanic because of its nearness to the Atlantic Ocean on the East and the Chesapeake Bay on the West. The range between the summer and winter temperatures is slight. The summers are not excessively hot and the winters are not extremely cold nor long. The mean annual temperature for the area is 55° F. The length

Table 1. Distribution of Farms by Counties, 1936

County	Total Farms in Counties Surveyed						Farms Surveyed by Counties					
	Total Farms	Per Cent	Tenant Farms	Per Cent of Total Farms	Owner Farms	Per Cent of Total Farms	Farms Surveyed	Per Cent	Tenant Farms Surveyed	Per Cent of Farms Surveyed	Owner Farms Surveyed	Per Cent of Farms Surveyed
Cecil	1,298	19.8	358	27.6	842	64.9	15	11.7	3	20.0	12	80.0
Kent	1,014	15.5	441	43.5	517	51.0	45	35.2	30	66.7	15	33.3
Queen Anne's	1,220	18.5	632	51.8	555	45.5	43	33.6	15	34.9	28	65.1
Talbot	1,046	16.0	443	42.4	484	46.3	13	10.1	4	30.8	9	69.2
Caroline	1,977	30.2	688	34.8	1,172	59.3	12	9.4	3	25.0	9	75.0
Total	6,555	100.0	2,562	39.1	3,570	54.5	128	100.0	55	43.0	73	57.0

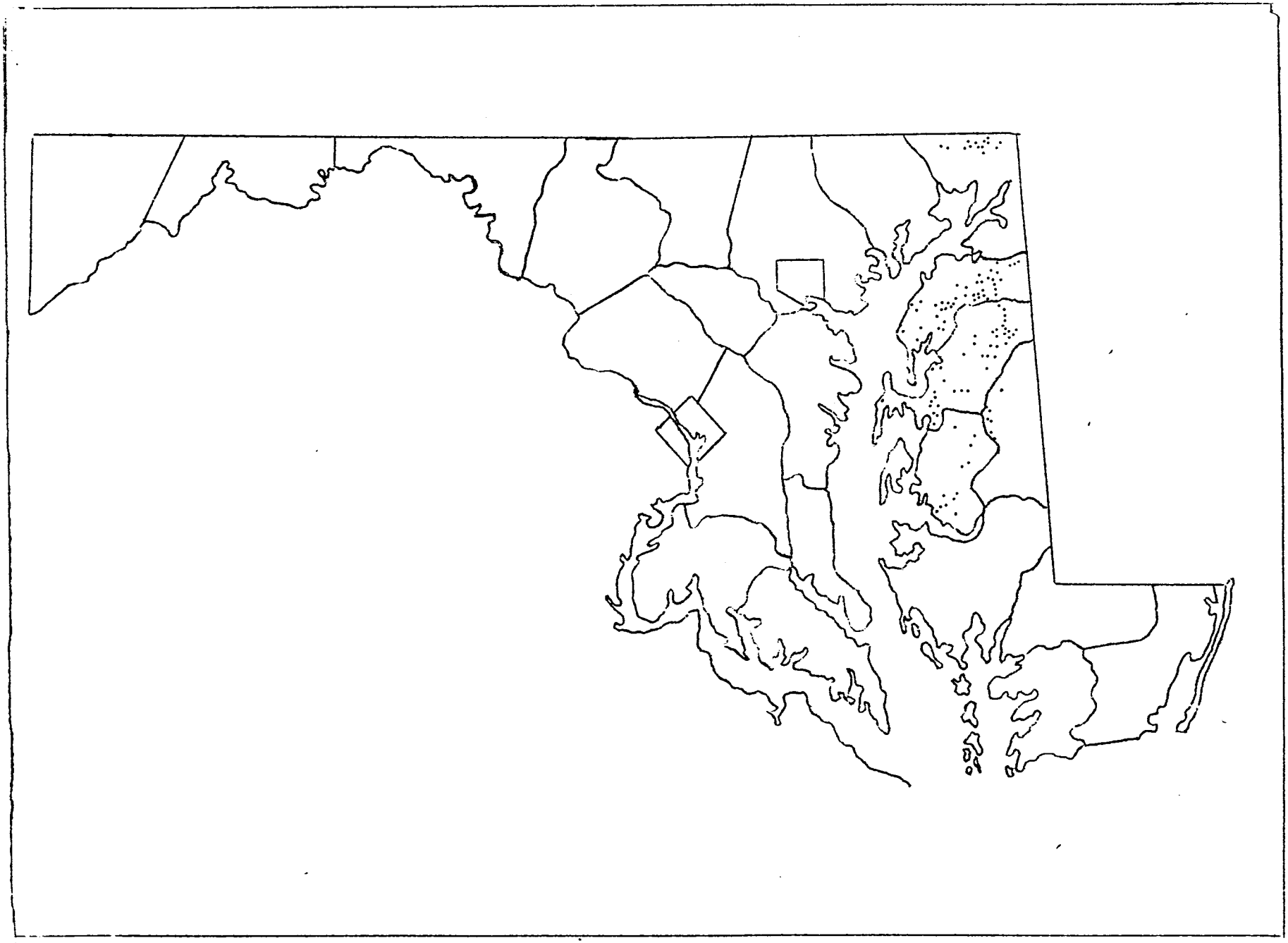

Figure 1. Location of Dairy Farms

of growing season ranges from 185 days in the North to 203 days in the South.

The mean annual precipitation for this area is about 42 inches. The rainfall is distributed fairly evenly throughout the year with the greatest amount occurring in the spring and summer months, and the least during the fall and winter months. Rainfall during the spring and early summer is sufficient for good crop growth, but during late summer and fall the dry period interferes seriously with the preparation of land for wheat, and it retards the growth of grass.

The topography of the land is level to slightly rolling, as shown in Table 2. The elevation varies from 12 feet at Stevensville, in Queen Anne's County, to 80 feet at Coleman, in Kent County. Practically all the land is level enough for cultivation, but some of it is too low in fertility to support good crop growth.

A tropical hurricane on September 18 caused a loss of property and crops on the Upper Eastern Shore of $450,000[1]. Most of the farmers carried crop and property insurance which lessened the direct loss to the farmers.

In general, the climate of the Upper Eastern Shore Area is very good in comparison with other regions in the United States. The mild temperate climate; sufficient, evenly distributed precipitation; and a long growing season make this area adapted to a wide range of crops.

Soils and Natural Vegetation

The soils of the Upper Eastern Shore are largely sandy loams developed on the sands and clays of the northern Coastal Plains. The soils

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1 Maryland State Weather Bureau estimate.

Table 2. Climate and Topography of the Upper Eastern Shore Area

Station	County	Killing Frosts: Last in Spring (date) Average*	Killing Frosts: Last in Spring (date) 1936**	Killing Frosts: Last in Autumn (date) Average	Killing Frosts: Last in Autumn (date) 1936	Length of Growing Season (days) Average	Length of Growing Season (days) 1936	Mean Annual Temperature (degrees F.) Average	Mean Annual Temperature (degrees F.) 1936	Mean Annual Percipitation (inches) Average	Mean Annual Percipitation (inches) 1936	Elevation (feet)	Topography (slope)
Coleman	Kent	Apr. 12	Apr. 8	Oct. 27	Oct. 27	198	202	55.0	54.8	41.9	37.5	80	Level
Millington	Kent	Apr. 15	Apr. 25	Oct. 23	Oct. 27	191	185	54.7	55.0	43.0	42.3	27	Level
Elkton	Cecil	Apr. 23	Apr. 25	Oct. 24	Oct. 27	184	185	54.3	53.4	41.3	44.8	28	Rolling
Stevensville	Queen Anne's	Apr. 13	Apr. 8	Nov. 2	Oct. 28	203	203	55.0	55.6	40.7	43.0	12	Level
Ridgely	Caroline	Apr. 14	Apr. 25	Oct. 22	Oct. 27	191	185	54.9	55.9	41.1	45.6	57	Level
Easton	Talbot	Apr. 11	Apr. 25	Oct. 27	Oct. 27	199	185	55.2	55.1	40.7	49.8	35	Level

* Average up to and including 1930. United States Department of Agriculture Climatic Summaries.
** From Maryland State Weather Bureau, 1936.

of this area are known as the gray-brown podzolic soils. They are generally acid and develop in a moist and cool-temperate climate under a deciduous forest. Two-thirds of the crop land of this area is sassafras soil with State productivity ratings of 2 and 3. (Table 3) These soils are adapted to the production of corn, wheat, mixed hay, and fruit vegetables. During 1936, corn, tomatoes, late potatoes and barley made good yields; wheat fair yields; and oats and early potatoes poor yields.

ECONOMIC FACTORS AFFECTING AGRICULTURE IN THE AREA

Changes in relative prices, competition and marketing, and the inauguration of the Agricultural Conservation Programs are economic factors which have caused marked shifts in the agriculture of this area.

Changes in Relative Prices

Table 4 shows that Maryland farmers received more for each dollar spent in 1936 than any year since 1931. The index of purchasing power ratio increased each year since 1932, but was not as high in 1936 as in 1931. The indexes for prices received for products sold by Maryland farmers and prices paid by United States farmers from 1920 - 1936 are shown in Tables 5 and 6, respectively. Figures 2 and 3 show the same material graphically for prices received and paid for all commodities, for specific commodities of each group, and the purchasing power ratio. Milk, wheat, and corn, the principal sources of income, yielded good, and prices received for these products were relatively high in 1936, as shown in Table 7. The farmers of the Upper Eastern Shore Area were in a strong financial position during the year of this survey.

Table 3. Soil Types of the Upper Eastern Shore Area *

	Acres	Per Cent	State Production Rating	Corn	Winter Barley and Wheat	Winter Oats	Mixed Hay	Red Clover	Alfalfa	Leafy Vegetables	Fruit Vegetables	Permanent Pasture	Fruit	Forest	Potatoes
loam	1,216	.1	1	9(8)	8(6)	8(6)	9(8)	9(8)	8(6)	7(6)	9(8)	10(9)		(10)	8(6)
n and	399,808	39.0	2	9(6)	9(6)	7(5)	8(6)	7(6)	7(5)	7(5)	8(6)	7(6)	8(5)	(9)	8(6)
ly, grav- t (steep Elkton															
nd sandy	283,840	27.7	3	8(5)	7(5)	6(4)	7(5)	7(5)	7(5)	5(4)	8(5)	6(4)	7(5)	(8)	8(5)
and	42,528	4.1	4	6(4)	6(4)		6(4)			4(3)	6(3)	6(4)		(6)	
loam and oam d Sassfras	110,240	10.8	5	5(3)	5(3)		5(3)				6(4)	5(3)		(6)	9(5)
d Worsham	19,008	1.9	6	4(2)	4(2)		5(3)			6(4)	6(4)			(5)	7(4)
lummer	67,584	6.6	7							8(5)	8(5)				7(4)
Norfolk)) ony grav-)															
)	73,408	7.2	8				4(2)					6(4)		(6)	
	25,920	2.5	9									(2)			
and rough	1,088	.1	10												
	1,024,640	100.0													

aryland Agri. Exp. Sta. Bul. No. 351, The Soils of Maryland, by O. C. Bruce and J. E. Metzger.

Table 4. PURCHASING POWER RATIO IN MARYLAND, 1920 - 1936
(1909 - 1914 = 100)

Year	All Prices Received	All Prices Paid	Purchasing Power Ratio
1920	223	201	111
1921	153	152	101
1922	143	149	96
1923	148	152	97
1924	162	152	107
1925	172	157	110
1926	179	155	115
1927	155	153	101
1928	164	153	107
1929	167	153	109
1930	160	145	110
1931	133	124	107
1932	93	107	87
1933	98	109	90
1934	109	123	89
1935	115	125	92
1936	122	124	98

Table 5. Index Numbers of Prices Received for Products Sold by Maryland Farmers, 1920 - 1936*
(1909 - 1914 = 100)

Year	Indexes of Prices Received by Maryland Farmers								All Prices Received
	Grains	Fruits	Meat Animals	Dairy Products	Chickens and Eggs	Truck Crops	Tobacco	Miscellaneous	
1920	235	212	185	198	228	234	316	176	223
1921	128	201	125	148	174	135	232	101	153
1922	112	212	122	138	149	137	193	98	143
1923	117	135	124	157	152	133	256	114	148
1924	129	122	124	152	154	164	357	130	162
1925	165	154	143	156	166	168	329	106	172
1926	142	144	148	157	160	233	309	122	179
1927	133	129	148	161	149	157	243	107	155
1928	147	168	171	164	158	125	316	86	164
1929	128	159	171	163	168	141	348	87	167
1930	106	160	140	155	136	163	357	109	160
1931	74	117	100	133	114	118	380	105	133
1932	55	80	77	107	90	70	225	64	93
1933	79	94	72	100	83	94	210	68	98
1934	95	121	80	112	96	106	199	76	109
1935	95	105	116	119	118	85	234	78	115
1936	106	114	121	122	116	118	194	83	122

* Courtesy of Maryland Crop Reporting Service.

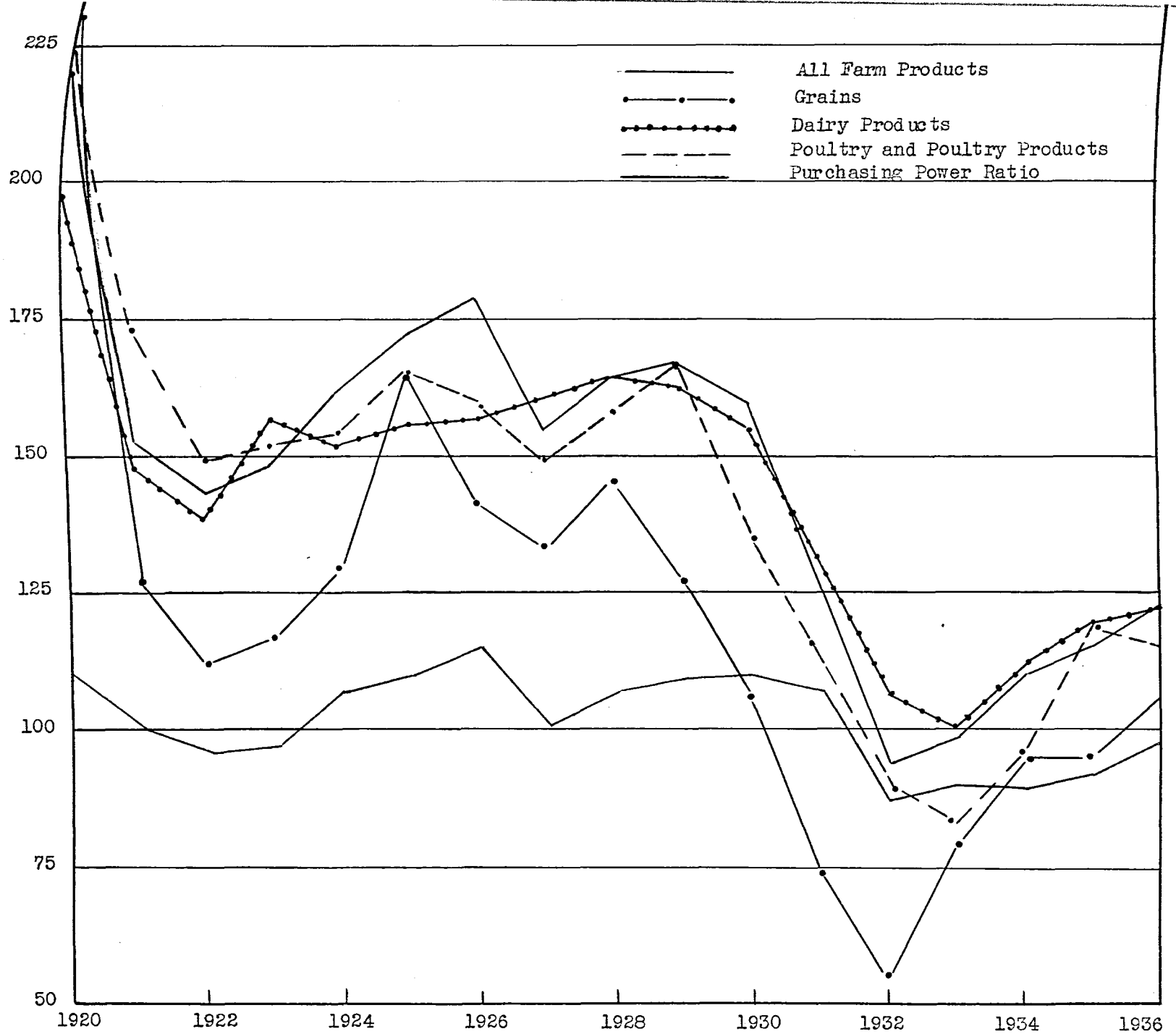

Figure 2. Trends in Prices of Farm Products in Maryland, 1920 - 1936, (1909 - 1914 - 100)

Table 6. Index Numbers of Prices Paid for Products Purchased by United States Farmers, 1920 - 1936*
(1909 - 1914 = 100)

	All Commodities in Production										
Year	Feed	Farm Machinery	Fertilizer	Building Material Other Than House	Equipment and Supplies	Seed	Total Produced Commodities	Total Family Maintenance	All Prices Paid	Farm Wages	Taxes
1920	137	167	186	205	189	132	174	222	201	239	209
1921	97	156	156	156	152	134	141	161	152	150	223
1922	123	142	129	159	140	130	139	156	149	146	224
1923	134	146	126	161	136	142	141	160	152	166	228
1924	142	152	120	161	133	151	143	159	152	166	228
1925	141	153	129	164	140	172	147	164	157	168	232
1926	137	154	126	162	144	214	146	162	155	171	232
1927	138	154	121	160	141	197	145	159	153	170	238
1928	148	154	131	158	138	179	148	160	153	169	239
1929	145	153	130	159	136	185	147	158	153	170	241
1930	132	152	126	155	131	174	140	148	145	152	238
1931	93	150	115	139	116	152	122	126	124	116	217
1932	69	141	99	126	107	102	107	108	107	86	188
1933	79	137	96	129	103	95	108	109	109	80	161
1934	110	144	104	146	109	140	125	122	123	90	153
1935	111	148	102	145	108	154	126	124	125	98	155
1936	115	149	96	146	110	142	126	122	124	107	156

* Courtesy of Maryland Crop Reporting Service.

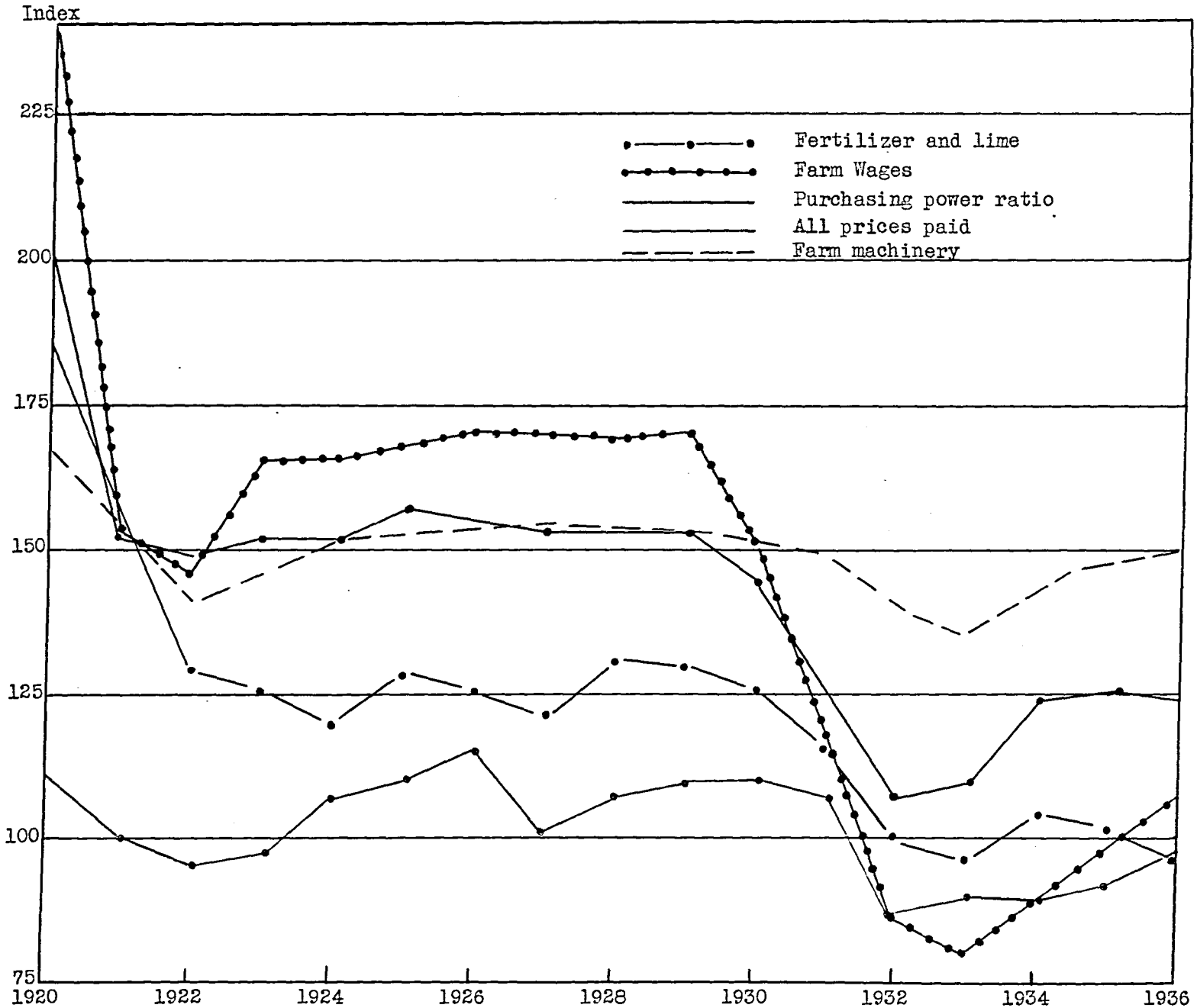

Figure 3. Trends in Prices of Commodities and Services Purchased by Farmers, 1920 - 1936
(1909 - 1914 = 100)

Table 7. Maryland Farm Prices of Certain Commodities*
(1913 = 100)

Year	Corn (bu.) (1913 = 69.4¢) Price	Index	Wheat (bu.) (1913 = 96.6¢) Price	Index	All Hay (ton) (1913 = 16.53) Price	Index	Wool (lb.) (1913 = 23.4¢) Price	Index	Eggs (doz.) (1913 = 23.4¢) Price	Index	Milk (cwt.) (1913 = $1.94) Price	Index
1920	$1.51	218	$2.31	239	$29.08	176	$ .40	169	$ .54	229	$3.90	202
1921	.69	100	1.29	134	16.95	102	.19	83	.39	167	2.75	143
1922	.64	92	1.13	117	15.70	95	.30	130	.33	140	2.55	133
1923	.89	128	1.11	114	18.15	110	.40	169	.34	145	3.10	160
1924	1.03	148	1.20	124	21.07	127	.38	164	.34	148	2.95	152
1925	1.14	164	1.61	166	16.38	99	.42	182	.38	161	3.05	156
1926	.72	104	1.47	153	19.74	119	.38	163	.35	149	3.00	156
1927	.88	126	1.31	135	17.18	104	.35	149	.32	137	3.20	164
1928	1.01	145	1.42	148	12.89	78	.43	183	.34	147	3.15	164
1929	1.01	146	1.20	124	13.28	80	.41	174	.37	157	3.20	166
1930	.95	137	.95	99	17.89	108	.27	115	.29	124	3.05	158
1931	.70	101	.65	67	17.73	107	.17	74	.23	99	2.55	132
1932	.36	52	.54	56	10.88	66	.12	50	.19	81	2.00	104
1933	.51	73	.77	80	11.08	67	.20	87	.19	81	1.85	96
1934	.69	99	.90	93	11.41	69	.26	112	.21	92	2.10	108
1935	.80	116	.87	90	11.27	68	.24	102	.27	114	2.25	117
1936	.78	122	1.01	104	12.18	74	.30	130	.26	109	2.30	118

* Courtesy of Maryland Crop Reporting Service.

Trends of Crop and Livestock Production

Prior to the depression of 1929, cash-grain was the principal type of farming; but a sudden drop in grain prices shifted the type of farming to dairy. During the depression years from 1932 to 1935, feeds and labor were relatively low, while the price of wholesale milk was relatively high. These conditions were favorable for dairying during this period. In the year of 1936 the shift was back toward cash-grain farming, due to high prices of feed and labor, low prices of fertilizer, and milk selling at only a moderate price.

Competition and Marketing

The competition between this new dairy area and the older dairy areas of Maryland, Delaware, New Jersey and Pennsylvania in the production of wholesale milk is offset by the increased demand for this product. Costs of marketing livestock products and crops are reasonable because of the nearness to market and the volume shipped. Practically all the milk from this area is shipped to Philadelphia by train. This area is part of the Philadelphia Milk Shed in which the majority of the farmers ship their milk to Supplee-Wills-Jones, Abbotts, or Harbisons, the three principal dairies of Philadelphia. Most of the crops are marketed in Philadelphia although Baltimore receives some of the Eastern Shore produce.

Type of Farming

Dairying contributed more than any other enterprise toward farm receipts, followed by cash-grain, other crops, poultry, other livestock and miscellaneous, as shown in Table 8. Dairying accounted for 45 per

cent of the returns and cash-grain 28.9 per cent, or a combined total for the two of 73.9 per cent, which was nearly three-fourths of the total receipts from all sources. Dairying was the specialized type of farming because it contributed more than 40 per cent of the total farm receipts.

Table 8. Distribution of Types of Farms by Sources of Receipts

Item	Amount	Per Cent
Dairy	$2,367	45.0
Cash-grain*	1,523	28.9
Other crops	604	11.5
Poultry	400	7.6
Other livestock	304	5.8
Miscellaneous	62	1.2
Total	$5,260	100.0

* Includes corn and wheat.

None of the farms had less than 6 cows, and 13 farms had 10 cows or less. The maximum number of cows on any farm was 48 with only 5 farms having more than 30. The average number of cows per farm was 17.5 and the average acreage was 237.1 acres. Five farms had 100 acres or less and 8 farms had more than 400 acres. On the average, the number of cows and the acreage per farm were sufficiently large to be classed as good-sized farm units.

The Agricultural Adjustment and Soil Conservation Programs have increased the acreage of soil-conserving crops and decreased the acreage of soil-depleting crops in this area. On the 128 dairy farms surveyed,

113 or 88 per cent of the farmers were eligible to receive benefit payments. The average payment to be received was $205 per farm. The above statements may seem contradictory to an earlier statement of a shift toward cash-grain farming, because cash-grain contributed a larger per cent of the total receipts than in any year since 1931. One of the reasons was relatively higher prices received for cash-grains in comparison with dairy products, as shown in Table 7. Another reason was that the acreage of cash-grains did not decrease much, due to the flexibility of the soil programs. Soil payments were made for fertilizer practices on present crop acreages and for putting idle land into soil-conserving crops more than for any reduction in wheat and corn acreage.

DEFINITIONS

Farm Receipts includes receipts from livestock and their products, less value of livestock purchases; use of equipment and labor off the farm; rent of buildings; insurance for damaged crops, machinery, livestock and buildings; and increase in livestock inventory.

Cash Farm Receipts includes all farm receipts except livestock inventory increase.

Non-Cash Farm Receipts includes increase in livestock inventory.

Farm Expenses includes expenses actually incurred, board of hired labor, depreciation on machinery and buildings, and decrease in feed and supply inventory, but does not include unpaid family labor.

Cash Farm Expenses includes expenses actually incurred.

Non-Cash Farm Expenses includes board of hired labor, depreciation on machinery and buildings, and decrease in feed and supply inventory.

Farm Income is farm receipts less farm expenses.

Interest on Investment is based on the current rate on well-secured farm mortgage loans. The rate charged was 5 per cent on total farm capital.

Farm Labor Income was the term used in this study to measure the success of the farms. It is farm income less interest on investment and represents only the income of the operator and his family plus the landlord's share.

Per Cent Return on Farm Capital was calculated by deducting the value of the operator's labor ($500) from farm income, then dividing by the total investment. It is return on farm capital expressed in per cent of the farm capital.

Products Used for Family Living is the value of food products and fuel furnished directly by the farm for family use.

Farm Labor Earnings is farm labor income plus the value of products used for family living.

Depreciation was determined by charging 2.5 per cent on the value of buildings and 10 per cent on the value of machinery at the beginning of the year.

Inventory Increases and Decreases were determined by subtracting the value of the ending inventory from the beginning inventory.

Production Index is the combined index of livestock production and crop yields. It is obtained by dividing the sum of the weighted index (total productive man work units multiplied by the index of each crop and each class of livestock) by the total productive man work units on the farm.

ORGANIZATION OF FARMS

Before considering the factors affecting profits, a discussion on the organization of the farms is given. The farms are divided into three groups. The first grouping is for all farms; the next is for the highest 25 per cent; and the last is for the lowest 25 per cent ranked according to farm labor income. A general summary, which includes the most important points in organization of the farms for each income group, follows.

Summary of the Farm Business

General summaries of the farm business, consisting of averages per farm for each of the items considered for each of the three groups, are shown in Table 9. These averages are on a per farm basis. The first income group consists of 128 dairy farms, or all of the dairy farms surveyed. The second and third income groups include the highest and lowest 32 farms, subsequently referred to as the high and low income groups, respectively.

The acreage per farm for the average income group was 237.1 acres, while the acreages for the high and low groups were 277.7 and 240.6, respectively. The high income group had the largest acreage, followed by the low and average groups. The reason that the low income group had a larger acreage than the average group was due to a smaller acreage per farm for the intermediate group, which lowered the total acreage per farm for the average group. The intermediate group is not shown in Table 9, but it includes the 64 farms, or 50 per cent of all farms, which are neither in the high nor low income groups. The crop acreage was largest

Table 9. Summary of the Farm Business

Item	All Farms		High 25 Per Cent*		Low 25 Per Cent**	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Number of farms	128		32		32	
Acres per farm	237.1	100.0	277.7	100.0	240.6	100.0
Acres in crops	132.4	55.8	157.5	56.7	129.8	53.9
Acres in pasture	43.6	18.4	44.1	15.9	48.7	20.3
Acres in other land	61.1	25.8	76.1	27.4	62.1	25.8
Cows per farm	17.5		21.3		16.9	
Total investment	$17,380		$20,518		$17,156	
Total receipts	5,260	100.0	7,805	100.0	3,962	100.0
Cash	4,801	91.3	6,715	86.0	3,840	96.9
Non-Cash	459	8.7	1,090	14.0	122	3.1
Total expenses	3,449	100.0	4,113	100.0	3,718	100.0
Cash	2,519	73.0	3,101	75.4	2,622	70.5
Non-Cash	930	27.0	1,012	24.6	1,096	29.5
Farm income	1,811		3,692		244	
Interest on investment	869		1,026		857	
Farm labor income	942		2,666		-613	
Return on investment	1,311	7.5	3,192	15.6	-256	-1.5
Products used for family living	392		387		418	
Farm labor earnings	$ 1,334		$ 3,053		$ -195	

* Twenty-five per cent of farms having the highest farm labor incomes.
** Twenty-five per cent of farms having the lowest farm labor incomes.

for the high income group, followed by the average and low groups, as shown in Table 9. Crop land constituted 56 per cent of the total acreage on all farms.

The average number of cows per farm for the average income group was 17.5. The average numbers of cows on the farms in the high and low income groups were 21.3 and 16.9, respectively.

The average income group had a total investment of $17,380; whereas for the high income group it was $20,518; and for the low income group it was $17,156. According to Table 10, the relative amounts invested in real estate, livestock, machinery and equipment, and feed and supplies per farm did not differ widely among the three income groups. The investments in land and buildings accounted for nearly three-fourths of the total investment on all farms.

The cash farm income was calculated for each of the income groups, but was not used in Table 9 because it does not give as complete an analysis of the farm business as farm income. It does not include non-cash receipts and expenses, which are necessary to determine the farm income. However, the cash income for the high group was three times larger than for the low group and one and one-half times larger than for the average group.

The farm income for the high group was twice as large as for the average group and fifteen and one-half times larger than the low group. The farm incomes for the average, high and low income groups were $1,811, $3,692, and $244 per farm, respectively.

Interest on investment was charged at 5 per cent on the total investment, and this sum was subtracted from farm income to arrive at farm labor income. The average investment per farm was largest for the high group, therefore, a larger amount was deducted from farm income for that

Table 10. Distribution of Investment

Item	All Farms		High 25 Per Cent		Low 25 Per Cent	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Real estate	$12,773	73.5	$14,797	72.1	$12,884	75.1
Land	7,386	42.5	8,610	42.0	7,282	42.4
Buildings	5,387	31.0	6,187	30.1	5,602	32.7
Livestock	2,618	15.1	3,256	15.9	2,413	14.1
Cattle	1,513	8.7	2,009	9.8	1,406	8.2
Poultry	115	.7	119	.3	102	.6
Sheep	66	.4	73	.4	64	.4
Horses and mules	850	4.9	983	4.8	775	4.5
Hogs	74	.4	72	.3	66	.4
Machinery and equipment	1,141	6.5	1,423	6.9	1,010	5.9
Feed and supplies	848	4.9	1,042	5.1	849	4.9
Total investment	$17,380	100.0	$20,518	100.0	$17,156	100.0

group, because the interest rate charged was the same per farm for each of the groups.

The farm labor income per farm varied from a minus $613 for the low income group to $2,666 for the high group, or a range of $3,279 between these two groups. The farm labor income for the average group was $942, which is the average net return per farm on the 128 dairy farms surveyed. Figure 4 shows the distribution of farm labor incomes on all farms. The number of farms which made positive farm labor incomes was 95, while on the remaining 33 farms there was a negative farm labor income. The high income group consisted of 17 owner and 15 tenant operated farms. Figure 5 shows that the largest number of farms received farm labor incomes ranging from 0 to $1,000. The number of farms receiving farm labor incomes fanging from -$1,000 to $2,000 was 99 out of the 128 farms surveyed, or 77.3 per cent.

For comparative purposes, the per cent return on investment was calculated by deducting $500 (value of the operator's labor) from farm income, and dividing the remainder by the total investment. Per cent return on investment is not a valid measure of success for any of the income groups, because $500 for the operator's management and labor is only an arbitrary figure and likely would not be the same for each group, if it were measurable. However, from the above method of calculating return on investment, the high, average, and low income groups had 15.6, 7.5, and -1.5 per cent return on investment per farm, respectively.

The values of farm raised products, which were used for family living, were added to farm labor income to determine the farm labor earnings. The farm labor earnings on high, average, and low income groups were $3,053, $1,334, and -$195 per farm, respectively.

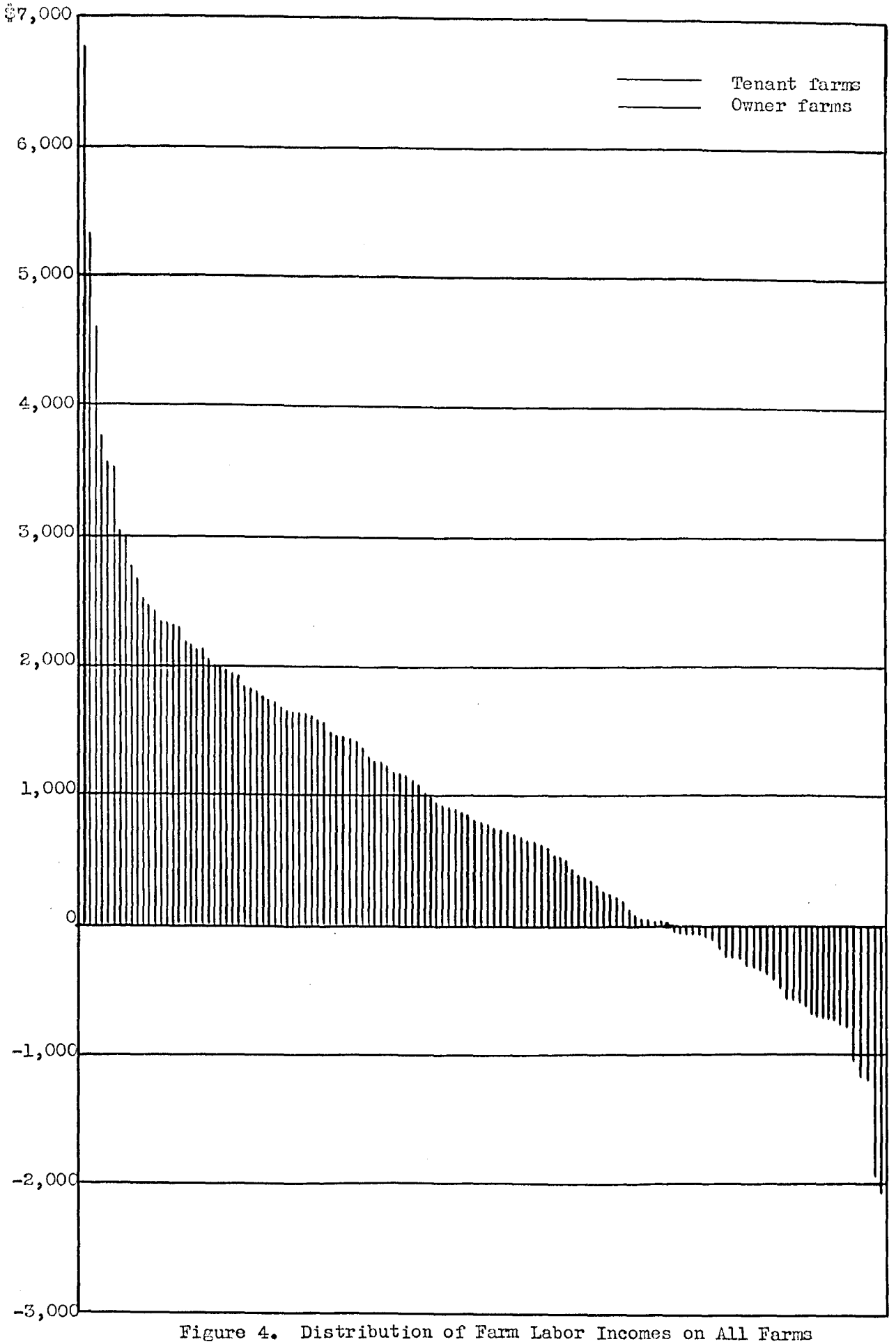

Figure 4. Distribution of Farm Labor Incomes on All Farms

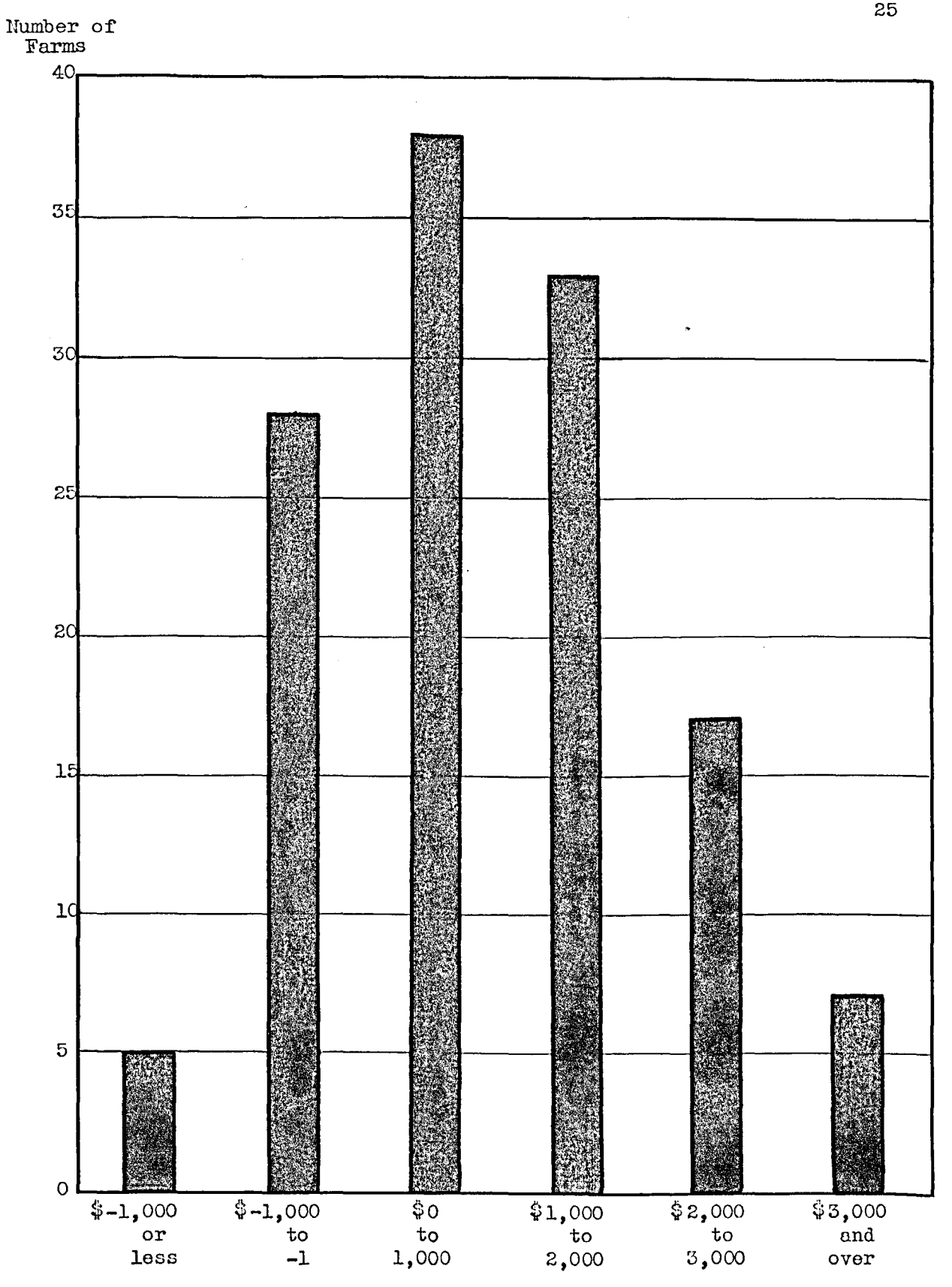

Figure 5. Distribution of Farm Labor Incomes on All Farms

Receipts

Table 11 illustrates the distribution of all farm receipts for each of the three income groups. On the farms in the high income group, receipts averaged twice as large as for farms in the low group and 1.5 times larger than the average for all farms. The total receipts for the high, average and low income groups were $7,805, $5,260, and $3,962, respectively. In order of importance the receipts for all farms were as follows: dairying, cash-grain crops, other crops, other livestock, poultry, and miscellaneous.

An itemized analysis of farm receipts is shown in Table 12 and Figure 6. The component parts of each major source of receipts (Table 11) are shown in Table 12 as absolute and relative amounts of the total farm receipts. Livestock receipts amounted to nearly two-thirds of the total receipts, while dairy receipts accounted for 51 per cent on the high income group of farms. The high income group showed relatively larger receipts from dairy and all livestock and less from crops than either the average or low groups of farms. Miscellaneous receipts, which are not itemized, includes man, horse, and machinery work off the farm; rent received on buildings; and insurance received for damaged crops, machinery, livestock and buildings.

Total cash receipts for the high income group were 1.4 and 1.75 times larger than the average and low groups, respectively. Cash receipts for the high income group were $6,715. The low income group had cash receipts amounting to $3,840, whereas the cash receipts for the average group were $4,801. Table 13 illustrates that milk, cash-grain crops and other crops, in the order named, were the most important sources of cash receipts for all three income groups. Dairy, poultry, and other livestock inventory increases made up the non-cash receipts as shown in Table 14.

Table 11. Summary of All Farm Receipts

Item	All Farms		High 25 Per Cent		Low 25 Per Cent	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Dairy	$2,367	45.0	$3,967	50.8	$1,635	41.3
Poultry	400	7.6	476	6.1	321	8.1
Other livestock	304	5.8	527	6.8	196	4.9
Cash-grain	1,523	28.9	1,933	24.8	1,184	29.9
Other crops	604	11.5	786	10.0	623	15.7
Miscellaneous	62	1.2	116	1.5	3	.1
Total	$5,260	100.0	$7,805	100.0	$3,962	100.0

Table 12. Itemized Farm Receipts

Item	All Farms		High 25 Per Cent		Low 25 Per Cent	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Total livestock	$3,071	58.4	$4,970	63.7	$2,152	54.3
Total dairy	2,367	45.0	3,967	50.8	1,635	41.3
Milk	1,833	34.8	3,000	38.4	1,350	34.1
Stock	208	4.0	211	2.7	196	4.9
Inventory increase	326	6.2	756	9.7	89	2.3
Total poultry	400	7.6	476	6.1	321	8.1
Eggs	170	3.2	203	2.6	95	2.4
Stock	223	4.2	273	3.5	226	5.7
Inventory increase	7	.2	-	-	-	-
Total other livestock	304	5.8	527	6.8	196	4.9
Stock	178	3.4	193	2.5	163	4.1
Inventory increase	126	2.4	334	4.3	33	.8
Total crops	2,127	40.4	2,719	34.8	1,807	45.6
Total grain	1,523	28.9	1,933	24.8	1,183	29.9
Corn	663	12.6	788	10.1	502	12.7
Wheat	859	16.3	1,145	14.7	677	17.1
Barley	1	0.0	-	-	4	.1
Total hay	13	.2	9	.1	-	-
Total truck crops	566	10.8	739	9.4	604	15.2
Sweet corn	114	2.2	152	1.9	81	2.0
Tomatoes	252	4.8	312	4.0	223	5.6
Peas	39	.7	40	.5	55	1.4
Asparagus	104	2.0	141	1.8	223	5.6
Other truck crops	57	1.1	94	1.2	22	.6
Total seeds	25	.5	38	.5	20	.5
Miscellaneous	62	1.2	116	1.5	3	.1
Total	$5,260	100.0	$7,805	100.0	$3,962	100.0

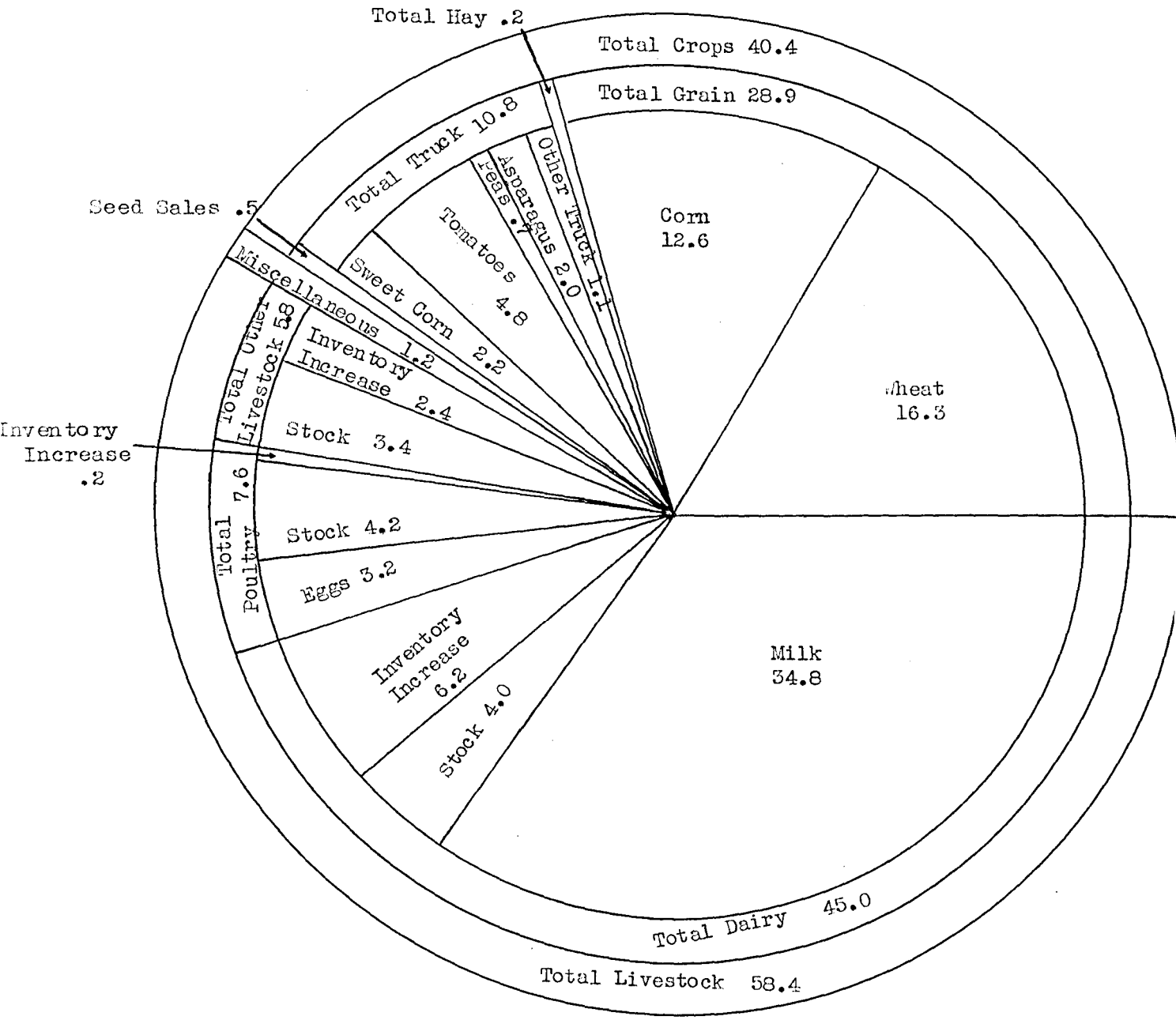

Figure 6. Percentage Distribution of Receipts on All Farms

Table 13. Summary of Cash Receipts

Item	All Farms		High 25 Per Cent		Low 25 Per Cent	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Milk	$1,833	38.2	$3,000	44.7	$1,350	35.2
Dairy stock*	208	4.3	211	3.1	196	5.1
Eggs	170	3.6	203	3.0	95	2.5
Poultry stock*	223	4.6	273	4.1	226	5.9
Other livestock*	178	3.7	193	2.9	163	4.2
Cash-grain	1,523	31.7	1,933	28.8	1,184	30.8
Other crops	604	12.6	786	11.7	623	16.2
Miscellaneous	62	1.3	116	1.7	3	.1
Total	$4,801	100.0	$6,715	100.0	$3,840	100.0

* Includes stock sales minus stock purchases.

Table 14. Summary of Non-Cash Receipts

Item	All Farms		High 25 Per Cent		Low 25 Per Cent	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Dairy inventory increase	$ 326	71.0	$ 756	69.4	$ 89	73.0
Poultry inventory increase	7	1.5	-	-	-	-
Other livestock inventory increase	126	27.5	334	30.6	33	27.0
Total	$ 459	100.0	$1,090	100.0	$ 122	100.0

Expenses

The distribution of all farm expenses for each of the three income groups of farms is shown in Table 15. The variation among the three groups in total expenses was not great. The high income group had the largest total expense, followed by the low and average groups. The total expenses for the high, low, and average income groups were $4,113, $3,718, and $3,449, respectively. In order of importance the items of expenses on all farms were as follows: labor, feed, board of hired labor, fertilizer and lime, decrease in feed and supplies, and depreciation.

Table 16 and Figure 7 show the itemized farm expenses in detail. The expenses for labor, feed, fertilizer and lime were relatively larger for the high income group of farms than for either the low or average groups and amounted to nearly 50 per cent of the total expenses for the high group. Miscellaneous expenses, which are not itemized, include feed grinding, silo filling, cow testing, milk cooling, horseshoeing, veterinary, registry fees, livestock spray material, twine, threshing, baling and wire, containers, telephone, and general.

Total cash expenses for each of the three income groups are shown in Table 17. Total cash expenses per farm for the high, low and average income groups were $3,101, $2,622, and $2,519, respectively. The most important cash expenses were labor, feed, and fertilizer and lime in the order named. Labor and feed were responsible for more than one-fourth and one-fifth, respectively, of the total cash expenses for each of the three income groups.

Table 18 illustrates that non-cash expenses consisted of board of hired labor, decrease in feed and supplies, and depreciation. The low,

Table 15. Summary of All Farm Expenses

Item	All Farms		High 25 Per Cent		Low 25 Per Cent	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Labor	$ 674	19.5	$ 897	21.8	$ 725	19.5
Feed	531	15.4	658	16.0	515	13.9
Board of hired labor	341	9.9	402	9.8	384	10.3
Fertilizer and lime	333	9.7	424	10.3	361	9.7
Decrease in feed and supplies	332	9.6	303	7.4	464	12.5
Depreciation	257	7.5	307	7.4	248	6.7
Repairs	194	5.6	208	5.1	215	5.8
Taxes	181	5.2	215	5.2	174	4.7
Fuel and oil	171	5.0	231	5.6	161	4.3
Miscellaneous	435	12.6	468	11.4	471	12.6
Total	$3,449	100.0	$4,113	100.0	$3,718	100.0

Table 16. Itemized Farm Expenses

Item	All Farms		High 25 Per Cent		Low 25 Per Cent	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Labor	$ 674	19.5	$ 897	21.8	$ 725	19.5
Repairs	194	5.6	208	5.1	215	5.8
Feed	531	15.4	658	16.0	515	13.9
Fertilizer and lime	333	9.7	424	10.3	361	9.7
Fuel and oil	171	5.0	231	5.6	161	4.3
Insurance	31	.9	37	.9	30	.8
Taxes	181	5.2	215	5.2	174	4.7
Seed	120	3.5	123	3.0	153	4.1
Auto-farm use	96	2.8	102	2.5	85	2.3
Miscellaneous	188	5.4	206	5.0	203	5.4
Board of hired labor	341	9.9	402	9.8	384	10.3
Decrease in feed and supplies	332	9.6	303	7.4	464	12.5
Depreciation	257	7.5	307	7.4	248	6.7
Total	$3,449	100.0	$4,113	100.0	$3,718	100.0

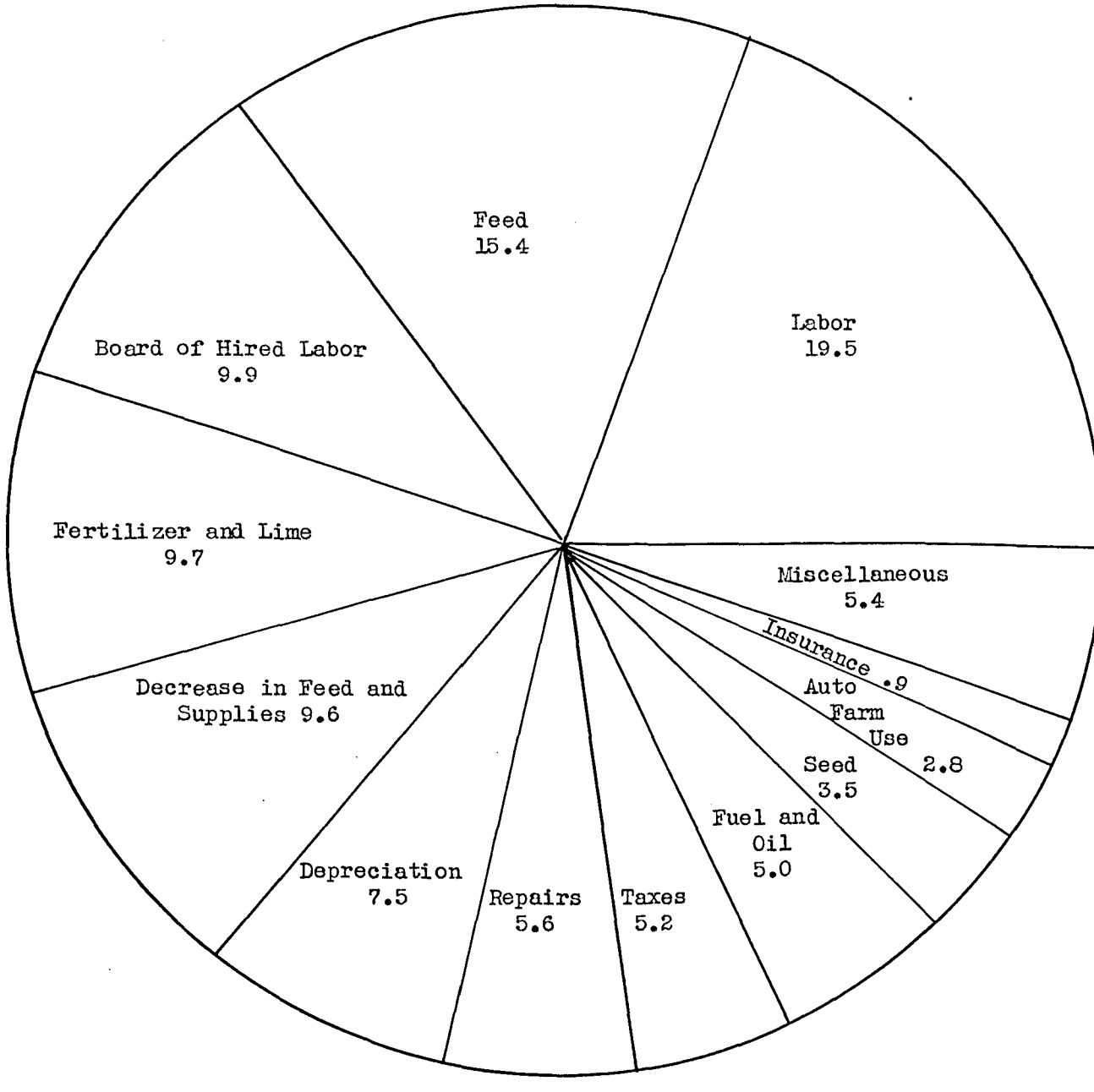

Figure 7. Percentage Distribution of Expenses on All Farms

Table 17. Summary of Cash Expenses

Item	All Farms		High 25 Per Cent		Low 25 Per Cent	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Labor	674	26.8	897	28.9	725	27.7
Repairs	194	7.7	208	6.7	215	8.2
Feed	531	21.1	658	21.2	515	19.6
Fertilizer and lime	333	13.2	424	13.7	361	13.8
Fuel and oil	171	6.8	231	7.5	161	6.1
Insurance	31	1.2	37	1.2	30	1.1
Taxes	181	7.2	215	6.9	174	6.6
Seed	120	4.8	123	4.0	153	5.8
Auto-farm use	96	3.8	102	3.3	85	3.3
Miscellaneous	188	7.4	206	6.6	203	7.8
Total	$2,519	100.0	$3,101	100.0	$2,622	100.0

Table 18. Summary of Non-Cash Expenses

Item	All Farms		High 25 Per Cent		Low 25 Per Cent	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Board of hired labor	$ 341	36.7	$ 402	39.7	$ 384	35.0
Decrease in feed and supplies	332	35.7	303	29.9	464	42.4
Depreciation	257	27.6	307	30.4	248	22.6
Total	$ 930	100.0	$1,012	100.0	$1,096	100.0

high, and average income groups had total non-cash expenses of $1,096, $1,012, and $930 per farm, respectively.

The expenses per dollar of receipts for the high income group were only 53 cents; while they were 66 cents for the average group; and were 94 cents for the low group, as shown in Table 19. This table shows that the high income farms spent relatively less per dollar of receipts than either the average or low groups.

Table 19. Expenses Per Dollar of Receipts

Income Group	Total Receipts	Total Expenses	Expenses Per Dollar of Receipts
Average of all farms	$5,260	$3,449	$.66
High 25 per cent	7,805	4,113	.53
Low 25 per cent	3,962	3,718	.94

FACTORS AFFECTING FARM PROFITS

Farm profits in this study were measured by the amount of farm labor income per farm. Some of the factors affecting the farm labor income were: size of the business; rates and efficiency of production, which include efficiency and production of the dairy, other livestock and crop enterprises; efficiency of labor and machinery; and balance, or selection and combination of enterprises. Type of farming is a factor affecting farm labor income, but is not used in this study as all the farms are of the same type.

Size of Business

Some of the factors which determined the size of the farm business were: number of cows, productive man work units, total acres, crop acres, total animal units, productive animal units, man equivalent, cash-grain sales, milk production, milk sales, total investment, farm receipts and farm income as illustrated in Table 20.

As the number of dairy cows per farm increased, the amount of farm labor income increased. The largest profits per farm were obtained with more than 25 cows. The size of the dairy herd on the farms in the aver- income group corresponded closely to farm labor income, but the number of cows had very little effect on farm labor income on farms in the high and low income groups (Table 21).

The number of productive man work units had little effect on farm labor income. The farms with the largest farm labor income had 751 to 900 productive man work units (Table 22).

The largest farm labor income was obtained on farms with a total acreage and a crop acreage of from 251 to 300 and 151 to 200 acres,

Table 20. Measures of Size of Farm Business

Item	All Farms	High 25 Per Cent	Low 25 Per Cent
Number of cows	17.5	21.3	16.9
Productive man work units	699	792	693
Acres in farm	237.1	277.7	240.6
Acres in crops	132.4	157.5	129.8
Number of animal units	32.2	37.1	31.6
Number of productive animal units	20.7	24.6	19.8
Man equivalent	3.5	3.9	3.5
Cash-grain sales	1,523	1,933	118.4
Pounds of milk produced	85,535	122,081	70,994
Milk sales	$ 1,833	$ 3,000	$ 1,350
Total investment	17,380	20,518	17,156
Farm receipts	5,260	7,805	3,962
Farm income	1,811	3,692	244
Farm labor income	$ 942	$ 2,666	$ -613

Table 21. Relation of Size of Dairy Herd to Farm Labor Income

Number of Cows	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
10 and under	13	10.2	$ 607	1	3.1	$2,113	3	9.4	$ -475
10.1 to 15.0	45	35.2	579	9	28.1	2,226	15	46.9	-654
15.1 to 20.0	37	28.9	1,063	7	21.9	3,210	7	21.9	-606
20.1 to 25.0	19	14.8	1,297	7	21.9	2,471	4	12.5	-433
Over 25	14	10.9	1,615	8	25.0	2,925	3	9.3	-803
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 22. Relation of Productive Man Work Units to Farm Labor Income

Productive Man Work Units	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
450 and under	14	10.9	$ 725	3	9.3	$2,209	3	9.4	$ -432
451 to 600	34	26.6	611	6	18.8	2,811	12	37.5	-580
601 to 750	36	28.1	750	6	18.8	2,221	9	28.1	-532
751 to 900	19	14.9	1,632	7	21.9	2,785	1	3.1	-811
Over 900	25	19.5	1,239	10	31.2	2,900	7	21.9	-823
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

respectively. However, neither of these factors were very closely related to farm labor income, although the tendency was for higher farm incomes to accompany larger acreages (Tables 23 and 24).

The total number of animal units on the farms in the average and high income groups were related closely to farm labor income. Farms with more than 40 animal units had the largest farm labor income with each increase in number of animal units being followed with an increase in farm labor income. On farms in the average income group the farm labor income increased with each increase in number of productive animal units. The most efficient farms had more than 30 productive animal units (Tables 25 and 26).

The largest farm labor income was obtained on farms with more than 5.5 man equivalent. Farms with man equivalent of 1.5 and less were more profitable than farms with 1.6 to 4.5 (Table 27).

The highest farm labor income was recorded on farms with sales from cash-grain of more than $3,000. However, farms with cash-grain sales of $500 or less had higher profits than farms with cash-grain sales ranging from $501 to $1,500 (Table 28).

Total milk production and milk sales per farm have more effect on farm labor income than any of the factors analyzed thus far. On farms in the average and high income groups, farm labor income increased nearly in like proportion with increases in milk production and milk sales per farm. The highest profits were recorded on farms with milk production of more than 150,000 pounds and milk sales of more than $3,500 (Tables 29 and 30).

Farms with a total investment of $20,001 to $25,000 had the largest profits. Farms with a total investment of $15,001 to $20,000 received higher profits than farms with more than $25,000 investment (Table 31).

Table 23. Relation of Total Acreage to Farm Labor Income

Total Acres	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
150 and under	25	19.5	$ 748	5	15.6	$2,914	6	18.8	$ -638
151 to 200	30	23.4	946	6	18.8	2,672	7	21.9	-514
201 to 250	29	22.7	759	5	15.6	2,349	9	28.1	-469
251 to 300	20	15.6	1,319	7	21.9	2,609	4	12.5	-474
Over 300	24	18.8	1,046	9	28.1	2,745	6	18.7	-1,013
Total average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 24. Relation of Crop Acreage to Farm Labor Income

Crop Acres	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
100 and under	41	32.0	$ 715	7	21.9	$3,127	11	34.4	$ -604
101 to 150	49	38.3	820	10	31.3	2,338	15	46.9	-507
151 to 200	21	16.4	1,658	8	25.0	2,700	0	-	-
Over 200	17	13.3	956	7	21.8	2,635	6	18.7	-895
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 25. Relation of Total Number of Animal Units to Farm Labor Income

Total Animal Units	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
20 and under	13	10.1	$ 596	2	6.2	$2,090	3	9.3	$ -432
20.1 to 30.0	49	38.3	639	8	25.0	2,492	15	46.9	-618
30.1 to 40.0	45	35.2	1,068	11	34.4	2,751	10	31.3	-604
Over 40	21	16.4	1,591	11	34.4	2,812	4	12.5	-752
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 26. Relation of Number of Productive Animal Units to Farm Labor Income

Total Productive Animal Units	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
15 and under	23	18.0	$ 375	3	9.3	$2,124	9	28.1	$ -640
15.1 to 20.0	43	33.6	856	7	21.9	2,714	8	25.0	-591
20.1 to 25.0	35	27.3	967	8	25.0	2,760	10	31.3	-605
25.1 to 30.0	17	13.3	1,454	8	25.0	2,558	2	6.2	-991
Over 30	10	7.8	1,653	6	18.8	2,900	3	9.4	-365
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 27. Relation of Man Equivalent to Farm Labor Income

Man Equivalent	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
1.5 and under	4	3.1	$1,008	2	6.2	$2,066	1	3.1	$ -874
1.6 to 2.5	29	22.7	675	6	18.8	2,140	8	25.0	-468
2.6 to 3.5	53	41.4	792	9	28.1	2,355	11	34.4	-610
3.6 to 4.5	22	17.2	967	4	12.5	3,184	7	21.9	-674
4.6 to 5.5	11	8.6	1,524	6	18.8	2,491	2	6.2	-496
Over 5.5	9	7.0	1,900	5	15.6	3,893	3	9.4	-863
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 28. Relation of Cash-Grain Sales to Farm Labor Income

Cash-Grain Sales	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$500 and under	26	20.3	$ 961	7	21.9	$3,224	7	21.9	$ -562
501 to $1,500	42	32.8	463	5	15.6	1,896	16	50.0	-529
1,501 to 2,500	37	28.9	1,069	10	31.2	2,517	7	21.9	-749
2,501 to 3,500	15	11.7	1,494	6	18.8	2,662	1	3.1	-1,914
Over 3,500	8	6.3	1,766	4	12.5	3,032	1	3.1	-68
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 29. Relation of Total Milk Production to Farm Labor Income

Total Pounds of Milk Produced	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
50,000 and under	28	21.9	$ 137	1	3.1	$2,359	12	37.5	$ -744
50,001 to 75,000	34	26.6	623	4	12.5	2,409	9	28.1	-462
75,001 to 100,000	32	25.0	1,081	11	34.4	2,200	7	21.9	-736
100,001 to 125,000	16	12.5	1,090	4	12.5	2,458	2	6.3	-446
125,001 to 150,000	7	5.4	2,132	3	9.4	3,545	1	3.1	-105
Over 150,000	11	8.6	2,595	9	28.1	3,095	1	3.1	-391
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 30. Relation of Total Milk Sales to Farm Labor Income

Total Milk Sales	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$1,000 and under	33	25.8	$ 276	3	9.4	$2,221	13	12.5	$ -705
1,001 to $1,500	36	28.1	835	5	15.6	2,555	9	56.3	-462
1,501 to 2,500	38	29.7	988	11	34.4	2,301	8	25.0	-726
2,501 to 3,500	16	12.5	1,852	9	28.1	2,609	1	3.1	-105
Over 3,500	5	3.9	3,337	4	12.5	4,269	1	3.1	-391
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 31. Relation of Total Investment to Farm Labor Income

Total Investment	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$10,000 and under	10	7.8	$ 438	1	3.1	$2,113	3	9.4	$ -722
10,001 to $15,000	41	32.0	396	4	12.5	1,869	14	43.8	-455
15,001 to 20,000	42	32.8	1,220	13	40.6	2,689	8	25.0	-613
20,001 to 25,000	19	14.9	1,697	8	25.0	3,106	1	3.1	-2,079
Over 25,000	16	12.5	1,027	6	18.8	2,654	6	18.7	-684
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Farm labor income for the high and average income groups increased, and for the low income group less loss resulted, with increases in gross farm receipts. Farms that had more than $8,000 receipts in the high and average income groups had larger profits, while the farms in the low income group, with a like amount of receipts, lost less than other farms in the three income groups (Table 32).

Gross farm income was more closely associated with farm labor income than any of the other factors in determining the size of the farm business . With each increase in gross farm income, the high and average income groups of farms made larger profits and the farms in the low income group lost loss. The highest profits were made on farms with more than $4,000 gross farm income (Table 33). However, gross farm income is not a direct cause in measuring the amount of farm labor income.

Farms in the high income group had the largest farm business, when measured in terms of all of the factors enumerated in Table 20. In the average income group the farms were larger than the farms in the low income group, except in total acreage and number of men per farm.

It should be emphasized that the farms with the largest farm business are not always the most profitable. However, with favorable prices the larger farms have an opportunity to make larger profits, if managed efficiently than the smaller farms. The larger farms usually sustain greater losses in periods of low prices, but under ordinary conditions the larger farms have possibilities of larger profits because the output is larger; labor and machinery are more efficient; there is greater opportunity for large scale buying and selling; and greater efficiency of the entire enterprise is possible.

Table 32. Relation of Gross Farm Receipts to Farm Labor Income

Farm Receipts	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$2,000 and under	6	4.7	$ -353	0	-	$ -	4	12.5	$-760
2,001 to $4,000	38	29.7	45	1	3.1	2,113	18	56.3	-496
4,001 to 6,000	44	34.3	917	8	25.0	1,941	6	18.8	-998
6,001 to 8,000	23	18.0	1,505	10	31.3	2,451	2	6.2	-604
Over 8,000	17	13.3	2,705	13	40.6	3,320	2	6.2	-230
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$-613

Table 33. Relation of Gross Farm Income to Farm Labor Income

Gross Farm Income	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Income Income	Number of Farms	Per Cent	Farm Labor Income
$0 and less	10	7.8	$-1,150	0	-	$ -	10	31.3	$-1,150
1 to $1,000	35	27.3	-136	0	-	-	20	62.5	-397
1,001 to 2,000	29	22.7	710	0	-	-	2	6.2	-86
2,001 to 3,000	30	23.4	1,545	8	25.0	1,931	0	-	-
3,001 to 4,000	16	12.5	2,262	16	50.0	2,262	0	-	-
Over 4,000	8	6.3	4,208	8	25.0	4,208	0	-	-
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Rates of Production and Efficiency of Livestock and Crops

High yields of livestock and crops usually have a direct effect on the amount of farm labor income. Farms in the high income group had larger yields and greater efficiency than farms in the low and average groups, as shown in Table 34.

Table 34. Measures of Rates of Production and Efficiency of Livestock and Crops

Item	All Farms	High 25 Per Cent	Low 25 Per Cent
Production index	100	114	87
Crop acres per cow	7.6	7.4	7.7
Livestock index	100	116	83
Milk production per cow	4,880.1	5,732.4	4,195.4
Milk sales per cow	$ 105	$ 141	$ 80
Dairy receipts per $100 invested in livestock	$ 90	$ 122	$ 68
Feed purchased per cow	$ 30	$ 31	$ 30
Dairy receipts per $100 of feed purchased	$ 446	$ 603	$ 317
Egg sales per hen	$ 1.40	$ 1.60	$ 1.50
Poultry receipts per $100 invested in livestock	$ 15	$ 15	$ 13
Livestock receipts other than dairy and poultry	$ 304	$ 527	$ 196
Livestock receipts other than dairy and poultry per $100 invested in livestock	$ 12	$ 16	$ 8
Crop index	100	111	91
Crop receipts per crop acre	$ 16.06	$ 17.20	$ 16.60
Cash-grain sales per acre of cash-grain	$ 16.76	$ 17.78	$ 13.73
Other crop sales per acre of other crops	$ 14.54	$ 16.12	$ 14.30
Corn yield per acre	43	46	39
Wheat yield per acre	20	21	18
Fertilizer and lime expense per crop acre	$ 2.50	$ 2.70	$ 2.80
Crop sales per $100 expended for fertilizer and lime	$ 640	$ 641	$ 500
Farm labor income	$ 942	$ 2,666	$ -613

The production index is the most important measure that can be used to determine whether the yields are high or low. It further shows which enterprises are the most efficient from the standpoint of production in relation to the average in a particular area. Average yields were used as the basis for determining whether the yields were high or low on the farms in the high and low groups. The production index was 114 on the high income group of farms, while it was only 87 on the farms in the low income group. The farm labor income was the greatest on farms with a production index over 120. The degree of association between farm labor income and production was very high on farms in the average income group. The tendency was toward larger farm labor incomes on farms in the high income group and smaller losses on farms in the low income group with each increase in the production index. However, the relationship between production index and farm labor income was not as close on the high and low profit farms as on the average farms.

The number of crop acres per cow had little effect on farm labor income. However, the average, high and low income groups had 7.6, 7.4, and 7.7 crop acres per cow, respectively. The remaining measures will be treated under the headings of dairy, other livestock and crops.

Dairy Production, Efficiency and Milk Prices

The livestock index, which was determined principally by the average milk production per cow on all farms, is a good measure of farm success. The livestock index on farms in the high income group was 116, whereas in the low income group it was only 83. Farms with a livestock index over 120 were the most profitable, while farms with a livestock index of 75 and under were least profitable. The average income group showed a closer relationship between profits and livestock index than the high and low

Table 35. Relation of Production Index to Farm Labor Income

Production Index	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
75 and under	15	11.7	$ -90	0	-	$ -	8	25.0	$ -666
76 to 90	34	26.6	432	4	12.5	2,330	13	40.7	-792
91 to 105	36	28.1	1,030	8	25.0	2,360	7	21.9	-362
106 to 120	21	16.4	1,449	8	25.0	2,986	2	6.2	-560
Over 120	22	17.2	1,803	12	37.5	2,768	2	6.2	-172
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 36. Relation of Crop Acres Per Cow to Farm Labor Income

Crop Acres Per Cow	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
4 and under	17	13.3	$1,330	6	18.7	$3,570	5	15.6	$ -699
4.1 to 6.0	28	21.9	950	8	25.0	2,028	5	15.6	-591
6.1 to 8.0	35	27.3	773	6	18.7	2,481	8	25.0	-356
8.1 to 10.0	27	21.1	906	6	18.8	2,889	8	25.0	-730
Over 10	21	16.4	942	6	18.8	2,574	6	18.8	-746
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 37. Relation of Livestock Index to Farm Labor Income

Livestock Index	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
75 and under	28	21.9	$ -51	1	3.1	$2,359	14	43.8	$ -840
76 to 90	32	25.0	706	4	12.5	2,289	9	28.1	-333
91 to 105	19	14.8	1,209	6	18.8	2,539	3	9.4	-521
106 to 120	25	19.5	1,303	8	25.0	2,845	4	12.5	-546
Over 120	24	18.8	1,826	13	40.6	2,742	2	6.2	-560
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 38. Relation of Milk Production Per Cow to Farm Labor Income

Milk Production Per Cow (pounds)	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
3,000 and under	10	7.8	$ -100	0	-	$ -	6	18.8	$ -736
3,001 to 4,000	30	23.4	182	2	6.2	2,246	13	40.6	-706
4,001 to 5,000	34	26.6	969	7	21.9	2,239	5	15.6	-409
5,001 to 6,000	32	25.0	1,352	12	37.5	2,822	6	18.8	-543
Over 6,000	22	17.2	1,812	11	34.4	2,844	2	6.2	-364
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

groups, but the farm labor income had a tendency to increase with an increase in the livestock index on the farms in the three groups. The physical production of all livestock is important, but it should not be used as the sole factor in determining the success of a farm.

Milk production per cow on all farms was 4,880.1 pounds. Average milk production per cow on farms in the high income group was 5,732.4 pounds, but it was only 4,195.4 pounds on farms in the low income group. Milk sales per cow on the most profitable farms were $61 greater than on the least profitable farms. Milk sales per cow on the high, average and low income groups of farms were $141, $105, and $80, respectively. Milk production and milk sales per cow were closely associated with profitableness. The greatest profits were made on farms producing over 6,000 pounds and selling over $150 of milk per cow, respectively, while the least profits were made on farms producing 3,000 pounds or less and selling $75 or less per cow.

Dairy receipts per $100 invested in livestock were $54 greater on farms in the high profit group than on farms in the low profit group. Feed purchased per cow was $1.00 greater on the high profit group of farms than on the average or low income groups. Dairy receipts per $100 of feed purchased were $286 greater on farms in the high income group than on farms in the low income group. The factors, feed purchased per cow and dairy receipts per $100 of feed purchased, do not have much significance, because the amount of home-grown feeds could not be accurately obtained.

Table 41 shows milk shipments to dairies. Abbotts, Harbison's and Supplee-Wills-Jones dairies received more than 93 per cent of the milk produced by farmers surveyed in this area and paid to the farmers 85 per cent of the total receipts from milk. The total poundage of milk shipped

Table 39. Relation of Milk Sales Per Cow to Farm Labor Income

Milk Sales Per Cow	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$75 and under	38	29.7	$ 143	3	9.3	$2,517	18	56.3	$ -741
76 to $100	40	31.2	841	6	18.8	2,188	9	28.1	-391
101 to 125	29	22.7	1,381	13	40.6	2,586	4	12.5	-592
126 to 150	15	11.7	1,529	6	18.8	2,493	1	3.1	-391
Over 150	6	4.7	3,078	4	12.5	4,010	0	-	-
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 40. Relation of Purchased Feed Per Cow to Farm Labor Income

Purchased Feed Per Cow	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$10 and under	21	16.4	$ 872	7	21.9	$2,391	6	18.8	-771
11 to $20	24	18.8	456	3	9.4	2,912	9	28.1	-753
21 to 30	43	33.6	929	11	34.3	2,325	10	31.2	-439
31 to 40	10	7.8	1,291	2	6.2	3,066	0	-	-
41 to 50	14	10.9	930	3	9.4	2,751	4	12.5	-514
Over 50	16	12.5	1,586	6	18.8	3,460	3	9.4	-590
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

by farmers was 10,284,488 pounds, while the amount received for that milk was $225,522, or an average price per hundredweight of $2.19.

Table 41. Farm Milk Shipments to Dairies

Dairy	Number of Farms	Per Cent	Pounds of Milk Shipped	Value of Milk Shipped	Average Price Per Hundred-weight
Abbotts	33	25.8	2,355,740	$ 49,912	$2.12
Harbisons	49	38.2	3,472,609	70,555	2.03
Supplee-Wills-Jones	35	27.2	3,563,889	69,394	1.95
Other dairies	9	7.2	516,250	9,977	1.93
Retail milk*	2	1.6	376,000	25,684	6.83
Total or average	128	100.0	10,284,488	$ 225,522	$2.19

* Two farms retailed milk.

Monthly milk shipments for 68 farms are shown in Table 42 and Figure 8 for each of the income groups. The high income group averaged 4,500 pounds more milk per month than the low income group per farm. However, the yields were highest during May and June on the farms in each income group, while the price of milk per hundred weight was lowest during those two months. During the months of November and December milk yields were low and the price per hundred weight was high. The average price of milk per hundredweight on the 68 farms reporting monthly milk shipments was $2.02, as shown in Table 43.

Table 42. Monthly Milk Shipments in Pounds*

Month	All Farms (Farm Labor Income $942)	High Income Farms (Farm Labor Income $2,666)	Low Income Farms (Farm Labor Income $-613)
January	6,816	10,572	4,977
February	6,442	9,906	4,932
March	6,812	10,764	5,370
April	7,291	11,175	6,185
May	9,036	13,687	8,004
June	8,415	12,050	8,152
July	7,654	10,723	7,226
August	7,735	10,596	7,365
September	7,389	10,307	6,747
October	6,721	9,743	5,461
November	6,116	9,141	4,500
December	6,583	9,814	4,785
Year	87,010	128,478	73,704

* Only 68 farms reported milk shipments by months.

Table 43. Average Milk Prices by Months*

Month	Price Per Hundredweight	Month	Price Per Hundredweight
January	$2.10	July	$1.90
February	2.03	August	1.92
March	1.95	September	2.01
April	1.90	October	2.38
May	1.66	November	2.50
June	1.72	December	2.42
		Year	2.02

* For farms reporting milk shipments by months.

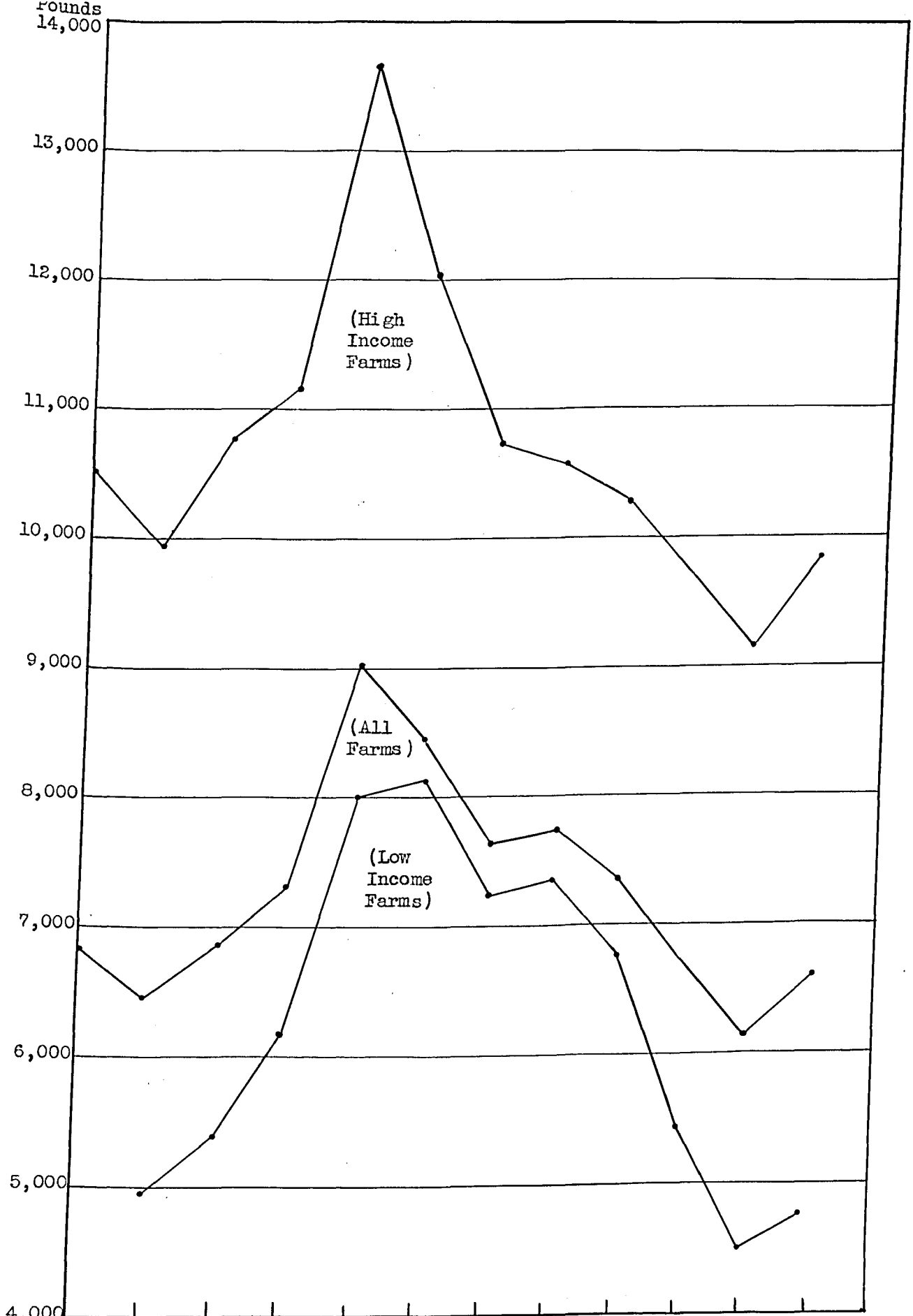

Figure 8. Milk Shipments by Months (68 Farms)

Other Livestock Production and Efficiency

Poultry was important as a supplementary enterprise on the farms surveyed. The association between egg receipts per hen and farm labor income was rather high, except that farm labor income was larger, when egg receipts per hen were $1.01 to $1.50, than when they were $1.51 to $2.00. Poultry receipts per $100 invested in livestock were larger on the farms in the high and average groups than on the farms in the low group, due to more efficient operation.

Livestock receipts, other than dairy and poultry, did not show a very marked effect on farm labor income. However, the farms in the high income group were more efficient in other livestock operation than the low income group of farms. Efficiency in operation of livestock, other than dairy and poultry, was not high on the farms in any of the income groups.

Production and Efficiency of Crops

Crop production and efficiency is not as important in measuring the success of dairy farms as dairy production and efficiency. However, certain crops are complementary to dairying and the production and efficiency of the dairy enterprise cannot be accurately measured until these crops have been considered.

Crop index is the best method in measuring crop production and its relation to the farm success. The crop index corresponded more closely to farm labor income on the farms in the high and low profit groups than in the average profit group. The tendency was toward larger profits on all farms with increases in the crop index and the largest profit was made on farms with a crop index over 120. The crop index on the farms in the high income group was 111, whereas it was only 89 on the farms in the low income group.

Table 44. Relation of Egg Sales Per Hen to Farm Labor Income

Egg Sales Per Hen	All Farms			High Income Farms			Low Income Farms		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$.50 and under	21	17.1	$ 118	3	9.7	$1,953	11	38.0	$ -852
.51 to $1.00	30	24.4	811	5	16.1	2,431	8	27.6	-514
1.01 to 1.50	34	27.6	1,319	11	35.5	2,671	5	17.2	-433
1.51 to 2.00	29	23.6	1,012	8	25.8	2,492	5	17.2	-524
Over 2.00	9	7.3	1,528	4	12.9	2,802	0	-	-
Total or average*	123	100.0	$ 933	31	100.0	$2,533	29	100.0	$ -630

* No poultry reported on five farms.

Table 45. Relation of Livestock Receipts Other Than Dairy and Poultry to Farm Labor Income

Other Livestock Receipts	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$0 and under	26	20.3	$ 892	7	21.8	$2,489	4	12.5	$ -884
1 to $200	37	28.9	492	6	18.8	2,796	17	53.1	-575
201 to 400	33	25.8	980	6	18.8	2,745	7	21.8	-563
401 to 600	12	9.4	1,130	4	12.5	2,798	2	6.3	-581
Over 600	20	15.6	1,663	9	28.1	2,606	2	6.3	-604
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 46. Relation of Crop Index to Farm Labor Income

Crop Index	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
75 and under	15	11.7	$ 84	1	3.1	$2,056	8	25.0	$ -623
76 to 90	29	22.7	935	7	21.9	2,214	7	21.9	-610
91 to 105	33	25.8	597	6	18.8	2,396	12	37.5	-753
106 to 120	26	20.3	1,337	8	25.0	2,779	1	3.1	-391
Over 120	25	19.5	1,508	10	31.2	3,114	4	12.5	-234
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 47. Relation of Crop Receipts Per Crop Acre to Farm Labor Income

Crop Receipts Per Acre	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$10 and under	27	21.1	$ 882	7	21.9	$3,177	8	25.0	$ -536
11 to $15	39	30.5	425	7	21.9	2,294	17	53.1	-748
16 to 20	38	29.7	972	5	15.6	3,021	6	18.8	-424
21 to 25	15	11.7	1,824	9	28.1	2,372	0	-	-
Over 25	9	7.0	1,762	4	12.5	2,641	1	3.1	-68
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Crop receipts per crop acre is a factor that measures the efficiency of all crops. Crop receipts per crop acre were highest for the high income group, but they were higher on the farms in the low income group than on the farms in the average group. However, crop receipts per crop acre did not show a direct relation to farm labor income on the farms in any of the income groups.

Cash-grain sales per acre of cash-grain were $4.00 per acre higher on the farms in the high profit group than on the farms in the low profit group. Other crop sales per acre of other crops were $2.00 higher for the high income group in contrast to the low income group. However, sales per acre is not as good an indicator of crop production as production per acre.

Corn yield per acre was more directly related to farm labor income than wheat yield. The corn yield on the farms in the high income group was 7 bushels per acre higher than on the farms in the low income group. The wheat yield was 3 bushels per acre higher on farms in the high income group than on farms in the low income group. The average yield of corn was 43 bushels per acre, while the average yield of wheat was 20 bushels.

Fertilizer and lime expense per crop acre was highest on the farms in the low income group. The effects of the fertilizer and lime were not as good on the farms in the low income group, because lower yields per acre were reported for this group. The fertility of the soil, method and rate of application, type of fertilizer, efficiency of the operator, and climatic conditions at the time of application are factors that may influence the efficiency of fertilizer and lime on crop yields. Crop sales per $100 expended for fertilizer and lime were $141 greater on the farms in the high income group in comparison to farms in the low income group, but only $1.00 greater than farms in the average income group.

Table 48. Relation of Corn Yield Per Acre to Farm Labor Income

Bushels Per Acre	All Farms			High Income Farms			Low Income Farms		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
30 and under	19	15.0	$ 117	0	-	$ -	10	31.3	$ -567
31 to 40	44	34.6	941	12	38.7	2,320	11	34.4	-644
41 to 50	34	26.8	1,002	9	29.0	2,687	7	21.9	-847
51 to 60	17	13.4	1,448	6	19.4	3,015	2	6.2	-296
Over 60	13	10.2	1,232	4	12.9	3,283	2	6.2	-172
Total or average*	127	100.0	$ 933	31	100.0	$2,685	32	100.0	$ -613

* No corn reported on one farm.

Table 49. Relation of Wheat Yield Per Acre to Farm Labor Income

Bushels Per Acre	All Farms			High Income Farms			Low Income Farms		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
13 and under	9	7.2	$ -80	1	3.3	$2,066	5	15.6	$ -896
14 to 16	23	18.4	833	5	16.7	2,517	7	21.9	-777
17 to 19	25	20.0	777	4	13.3	2,280	6	18.8	-234
20 to 22	39	31.2	652	8	26.7	2,048	11	34.4	-651
23 to 25	15	12.0	1,650	7	23.3	2,730	1	3.1	-68
Over 25	14	11.2	1,437	5	16.7	2,791	2	6.2	-538
Total or average*	125	100.0	$ 865	30	100.0	$2,440	32	100.0	$ -613

* No wheat reported on three farms.

Table 50. Relation of Fertilizer and Lime Expense Per Crop Acre to Farm Labor Income

Fertilizer and Lime Expense Per Crop Acre	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$1.00 and under	27	21.1	$ 716	5	15.6	$1,987	5	15.6	$ -637
1.01 to $2.00	54	42.2	911	14	43.7	2,364	15	46.9	-390
2.01 to 3.00	28	21.9	858	6	18.8	2,978	7	21.9	-1,169
3.01 to 4.00	12	9.4	1,178	3	9.4	3,983	3	9.4	-681
Over 4.00	7	5.4	1,978	4	12.5	3,168	2	6.2	-180
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Efficient production and utilization of all crops and especially corn and hay, in addition to pasture, are essential as complementary enterprises on dairy farms. It was found that less acres of all crops, corn, hay, and pasture were required per cow, per 100 pounds of milk produced, per $100 of dairy receipts, per $100 of other livestock receipts, and per $100 of all livestock receipts on farms in the high income group than on farms in the low and average income groups. However, the acres per animal unit, and per animal unit other than dairy, were as great or greater for all crops, corn, and hay on the farms in the high income group in contrast to the low and average income groups. The acres of pasture per animal unit, and per animal unit other than dairy, were less on the high profit farms than on the low or average profit farms. In general, the farms in the high income group were more efficient in the production and utilization of all crops, corn, hay, and pasture than the farms in the low and average income groups, as shown in Table 51.

Efficiency in the Utilization of Labor and Machinery

Efficiency of labor and machinery are hard to measure accurately. If labor expense is used as a measure of labor efficiency, the efficiency of hired labor is determined, unless an arbitrary amount is charged for the operator's labor and included in labor expense. However, for comparative purposes labor expense per $100 of receipts will be used as one measure of labor efficiency. Sales of crops and animal products, total acres, crop acres, productive man work units and output per man are good measures of labor efficiency. (Table 52).

Productive man work units per man did not have a direct effect on farm profits, but the highest profits were obtained on farms with more than 300 productive man work units per man. Each man on the farms in the

Table 51. Production and Utilization of All Crops, Corn, Hay, and Pasture

Item	All Farms	High 25 Per Cent	Low 25 Per Cent
Total animal units	32.2	37.1	31.6
Number of cows	17.5	21.3	16.9
Animal units other than dairy	14.7	15.8	14.7
Pounds of milk produced	85,535	122,081	70,994
Dairy receipts	$ 2,367	$ 3,967	$ 1,635
Other livestock receipts	$ 704	$ 1,003	$ 517
All livestock receipts	$ 3,071	$ 4,970	$ 2,152
Crop receipts	$ 2,127	$ 2,719	$ 1,807
Number of acres in crops	132.4	157.5	129.8
Number of acres in crops per:			
Animal unit	4.1	4.2	4.1
Cow	7.6	7.4	7.7
Animal unit other than dairy	9.0	10.0	8.8
100 pounds of milk produced	.2	.1	.2
$100 of dairy receipts	5.6	4.0	7.9
$100 of other livestock receipts	18.8	15.7	25.1
$100 of all livestock receipts	4.3	3.2	6.0
$100 of crop receipts	6.2	5.8	7.2
Number of acres in corn	33.5	37.0	32.6
Number of acres in corn per:			
Animal unit	1.0	1.0	1.0
Cow	1.9	1.7	1.9
Animal unit other than dairy	2.3	2.3	2.2
100 pounds of milk produced	.0	.0	.0
$100 of dairy receipts	1.4	.9	2.0
$100 of other livestock receipts	4.8	3.7	6.3
$100 of all livestock receipts	1.1	.7	1.5
Number of acres in hay	25.9	30.3	24.8
Number of acres in hay per:			
Animal unit	.8	.8	.8
Cow	1.5	1.4	1.5
Animal unit other than dairy	1.8	1.9	1.7
100 pounds of milk produced	.0	.0	.0
$100 of dairy receipts	1.1	.8	1.5
$100 of other livestock receipts	3.7	3.0	4.8
$100 of all livestock receipts	.8	.6	1.2
Number of acres in pasture	43.6	44.1	48.7
Number of acres in pasture per:			
Animal unit	1.4	1.2	1.5
Cow	2.5	2.1	2.9
Animal unit other than dairy	3.0	2.8	3.3
100 pounds of milk produced	.0	.0	.1
$100 of dairy receipts	1.8	1.1	3.0
$100 of other livestock receipts	6.2	4.4	9.4
$100 of all livestock receipts	1.4	.9	2.3

Table 52. Measures of Labor and Machinery Efficiency

Item	All Farms	High 25 Per Cent	Low 25 Per Cent
Man equivalent	3.5	3.9	3.5
Productive man work units per man	214	226	209
Cows per man	5.1	5.4	4.8
Crop acres per man	38.3	40.1	36.6
Milk sales per man	$ 530	$ 765	$ 382
Egg sales per man	49	52	27
Cash-grain sales per man	215	493	334
Receipts per man	1,503	2,001	1,132
Hired labor expense	1,015	1,299	1,109
Hired labor expense per $100 of receipts	19	17	28
Machinery investment	1,141	1,423	1,010
Machinery investment per man	330	363	286
Machinery investment per crop acre	8.60	9.00	7.80
Machinery investment per $100 of receipts	22	18	25
Farm labor income	$ 942	$2,666	$ -613

high income group was productively employed 15 days longer during the year than each man on the farms in the low income group.

The number of cows and crop acres per man were larger on the high profit farms than on the low profit farms. Neither of these factors had a direct effect on farm profits.

Milk, egg, and cash-grain sales per man were larger on the farms in the high income group in contrast to the low profit farms. However, milk sales per man was the only factor that had a high degree of association to farm labor income. Farm labor income increased with each increase in milk sales per man. The highest profits were obtained on farms with more than $900 milk sales per man.

Receipts per man were nearly twice as great on farms in the high income group as on farms in the low income group.

Hired labor expense, which includes board of hired labor in addition to hired labor, was $190 higher on the farms in the high income group than on the farms in the low income group. Hired labor expense per $100 of receipts was $11 less on the high profit farms than on the low profit farms.

Machinery investment per man and per crop acre was greater on the high profit farms than on the low profit farms. Machinery investment per crop acre was closely associated to farm labor income and with each increase in machinery investment, an increase in farm labor income resulted.

Machinery investment per $100 of receipts was $7.00 less on farms in the high income group than on farms in the low income group.

Number of cows per man was more closely related to farm labor income than any other labor efficiency factor and machinery investment per crop acre was the best measure of machinery efficiency.

Table 53. Relation of Productive Man Work Units Per Man to Farm Labor Income

Productive Man Work Units Per Man	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
150 and under	16	12.5	$1,184	5	15.6	$3,179	6	18.8	$ -495
151 to 200	43	33.6	804	8	25.0	2,697	9	28.1	-614
201 to 250	39	30.5	1,154	11	34.4	2,657	6	18.8	-718
251 to 300	21	16.4	530	4	12.5	2,488	9	28.1	-609
Over 300	9	7.0	1,209	4	12.5	2,168	2	6.2	-670
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 54. Relation of Number of Cows Per Man to Farm Labor Income

Number of Cows Per Man	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
3 and under	8	6.2	$ 778	1	3.1	$6,779	5	15.6	$ -515
3.1 to 4.0	22	17.2	946	5	15.6	2,418	4	12.5	-958
4.1 to 5.0	34	26.6	925	8	25.0	2,771	7	21.9	-736
5.1 to 6.0	24	18.8	747	5	15.6	2,451	7	21.9	-580
6.1 to 7.0	22	17.2	1,214	7	21.9	2,631	4	12.5	-392
Over 7	18	14.0	966	6	18.8	2,267	5	15.6	-489
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 55. Relation of Crop Acres Per Man to Farm Labor Income

Crop Acres Per Man	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
20 and under	7	5.5	$1,550	3	9.4	$4,731	4	12.5	$ -836
20.1 to 30.0	26	20.3	624	2	6.3	2,022	7	21.9	-720
30.1 to 40.0	39	30.5	850	9	28.1	2,165	6	18.8	-852
40.1 to 50.0	33	25.8	911	9	28.1	2,505	10	31.2	-550
Over 50	23	17.9	1,315	9	28.1	2,784	5	15.6	-685
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 56. Relation of Milk Sales Per Man to Farm Labor Income

Milk Sales Per Man	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$300 and under	25	19.5	$ 214	2	6.2	$2,679	10	31.2	$ -886
301 to $500	48	37.5	606	7	21.9	2,377	17	53.1	-495
501 to 700	27	21.1	1,408	9	28.1	2,538	2	6.3	-438
701 to 900	13	10.2	1,444	6	18.8	2,592	1	3.1	-784
Over 900	15	11.7	1,955	8	25.0	3,115	2	6.3	-342
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 57. Relation of Egg Sales Per Man to Farm Labor Income

Egg Sales Per Man	All Farms			High Income Farms			Low Income Farms		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$10 and under	18	14.7	$ 414	3	9.7	$2,061	8	27.6	$ -696
11 to $40	48	39.0	1,091	14	45.2	2,817	12	41.4	-642
41 to 70	26	21.1	948	5	16.1	2,253	4	13.8	-498
71 to 100	15	12.2	1,095	4	12.9	2,683	2	6.9	-878
Over 100	16	13.0	865	5	16.1	2,184	3	10.3	-415
Total or average*	123	100.0	$ 933	31	100.0	$2,533	29	100.0	$ -630

* No poultry reported on five farms.

Table 58. Relation of Cash-Grain Sales Per Man to Farm Labor Income

Cash-Grain Sales Per Man	All Farms			High Income Farms			Low Income Farms		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$200 and under	29	22.6	$ 863	8	25.0	$3,078	9	28.1	$ -703
201 to $400	32	25.0	746	6	18.8	2,263	8	25.0	-526
401 to 600	35	27.4	616	5	15.6	2,361	13	40.6	-597
601 to 800	15	11.7	1,190	4	12.5	3,091	2	6.3	-666
Over 800	17	13.3	1,894	9	28.1	2,549	0	-	-
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 59. Relation of Machinery Investment Per Man to Farm Labor Income

Machinery Investment Per Man	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$200 and under	12	9.4	$ 236	1	3.1	$5,549	8	25.0	$ -534
201 to $300	44	34.4	990	10	31.3	2,711	10	31.2	-602
301 to 400	36	28.2	854	7	21.9	2,254	7	21.9	-517
401 to 500	18	14.0	1,207	5	15.6	2,993	3	9.4	-466
Over 500	18	14.0	1,245	9	28.1	2,472	4	12.5	-1,079
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Table 60. Relation of Machinery Investment Per Crop Acre to Farm Labor Income

Machinery Investment Per Crop Acre	All Farms			High 25 Per Cent			Low 25 Per Cent		
	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income	Number of Farms	Per Cent	Farm Labor Income
$5 and under	17	13.3	$ 699	3	9.4	$2,713	7	21.9	$ -501
6 to $8	44	34.4	790	9	28.1	2,224	10	31.2	-619
9 to 11	34	26.5	1,068	10	31.3	2,992	10	31.2	-638
12 to 14	21	16.4	1,139	8	25.0	2,293	3	9.4	-611
Over 14	12	9.4	1,139	2	6.2	4,446	2	6.3	-858
Total or average	128	100.0	$ 942	32	100.0	$2,666	32	100.0	$ -613

Compensating Factors

Some of the measures used in determining farm success have been discussed, but it is recognized that these measures are not the only ones. The price received for commodities sold and the cost of producing those commodities have a direct influence on farm profits. The survey method of sampling used in this study is not void of error, because it may or may not be representative of the area studied. One year's results is not adequate to base any definite conclusions as to the profitableness of the farms in this area, except it is the best measure for 1936. By grouping the farms into the high, low, and average income brackets a practical basis for comparison may be made, but when this is done all individual differences in farms is lost. The value of farm products used for family living; age, education, and initiative of the operator; wife's cooperation; number in family; length of period the operator has operated the farm; whether the operator is a tenant or landlord; and available operating capital are personal factors that have a direct bearing on the success of the farm. Use made of farm by-products, crop rotation followed, work planning, feeding standards, seed used, livestock breeds, distance from shipping point, physical combination of enterprise, natural soil fertility, drainage, and climatic conditions are some of the other factors that may be partially responsible for farm success or failure.

Balance and Combination of Enterprises

The best balance or combination of enterprises requires employment of labor throughout the year and maximum efficiency in use of machinery, equipment, buildings, and land. Dairying provides employment during every month in the year, but other enterprises must be supplemented to give the most

efficient use of labor. The selection of the most profitable enterprises to supplement dairying on each farm must be decided by the individual farmer.

Source of receipts from the different enterprises on the farm is a measure of balance or combination of enterprises. Table 61 shows that in the high income group the farms were more specialized and received less of their total receipts from crops than the average or low income groups. Farms in the high income group sold less corn and hay and made more efficient use of pasture. Corn, hay and pasture are essential complementary enterprises to dairying. The use of poultry as a supplementary enterprise increased the profitableness of the farms. The most profitable farms received less from wheat and other crops than the low and average profit farms, which shows that in this study complementary crops are more important than supplementary crops in determining the best balance.

Table 61. Source of Receipts

Source of Receipts	All Farms		High 25 Per Cent		Low 25 Per Cent	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Total receipts	$5,260	100.0	$7,805	100.0	$3,962	100.0
Dairy	2,367	45.0	3,967	50.8	1,635	41.3
Poultry	400	7.6	476	6.1	321	8.1
Other livestock	304	5.8	527	6.8	196	4.9
All crops	2,127	40.4	2,719	34.8	1,807	45.6
Corn and hay	676	12.8	797	10.2	502	12.7
Wheat	859	16.3	1,145	14.7	677	17.1
Other crops	592	11.3	777	9.9	628	15.8
Other receipts	62	1.2	116	1.5	3	.1

A five-year rotation of corn, wheat, wheat, hay and pasture was formerly followed, but recently the shift has been toward a four-year rotation of corn, wheat, hay and pasture in this area. Soil conserving programs have helped to bring about this change, but the farmers have realized they must conserve and rebuild the soil if they are to receive maximum profits.

Dairy cows accounted for more than half of the animal units on all groups of farms. Livestock are essential to the maintenance of soil fertility and the utilization of course roughages, such as course hay and straw, which are otherwise unsalable. By using poultry as a supplementary enterprise and corn, hay and pasture as complementary enterprises, labor efficiency and profits were increased on dairy farms in this area.

STATUS OF TENANCY IN THE AREA

The tenancy problem has attracted nationwide attention in recent years. America is beginning to realize that tenant operation of farms is rapidly taking the place of owner operation. In Maryland the tenancy problem is not as acute as in the Central South and Middle West. Tenancy has increased in the United States; but it has decreased in Maryland since 1880. Due to landlord-tenant arrangements, long-time land-use adjustments are impossible on many tenant farms. Landlord-tenant relationships must be permanently improved before long-time land-use adjustments can be made on tenant farms.

Prevailing Type of Lease in Use

The majority of the 55 tenant farms in this study were operated on a crop-share basis. A few tenant farms were operated on a livestock and crop-share basis, but no tenants in this study had a cash-rent agreement.

Tenancy has increased in Maryland since 1929 and in the area surveyed since then. Tenancy has decreased in Kent County since 1929 but has increased in Cecil, Queen Anne's, Caroline, and Talbot counties[1]. Tenant farms have a larger acreage than owner farms, as shown by the higher percentage of farm land than number of farms operated by tenants (Table 62). The per cent of tenancy on the farms in this study for 1936 corresponds rather closely to the Census data on all farms in this area for 1935. The total acreage per farm was slightly lower on the 128 dairy farms surveyed than on all tenant farms in this area in 1935.

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[1] United States Census, 1935.

Table 62. Per Cent of Farms and Farm Land Operated by Tenants in Counties Surveyed

County	Per Cent Operated by Tenants			
	Farms		Farm Land	
	Total Farms* 1935	Farms Surveyed 1936	Total Farms* 1935	Farms Surveyed 1936
Cecil	27.8	26.7	38.5	19.6
Kent	43.5	71.1	57.5	67.9
Queen Anne's	51.8	27.9	59.4	37.6
Talbot	42.4	30.8	49.8	19.6
Caroline	34.8	25.0	43.5	33.3
Area	39.1	43.0	50.1	47.4

* Taken from United States Census, 1935.

On 85 per cent of the tenant farms in this study the crop-share type of lease prevailed, as shown in Table 63. Under this lease the landlord owned the land and buildings; paid the taxes, insurance and repairs on the buildings; and was charged for all depreciation thereon. All livestock and machinery were owned by the tenant who received all receipts from livestock and livestock products, purchased livestock, paid taxes and insurance on livestock and machinery, repaired machinery, and was charged for depreciation on machinery. Feed and supplies were owned jointly by the tenant and landlord and they shared jointly in any change. The two parties shared equally in the grown produce of wheat, corn, truck crops, and other cash crops; but the tenant received all the hay, corn silage, oats, and barley if they were fed on the farm. However, the landlord received half the receipts from any hay, corn silage, oats, or barley, if sold. The tenant paid for hired labor, board of hired labor and all feed purchased. The landlord and tenant shared equally in the expenses for

Table 63. Types of Leases Used on 55 Dairy Farms, Showing What Each Party Furnishes and Receives

Item	47 Farms		1 Farm		1 Farm		1 Farm		1 Farm		1 Farm		1 Farm		1 Farm		1 Farm	
	Land-lord's Share	Ten-ant's Share	Land-lord's Share	Ten-ant's Share	Land-lord's Share	Ten-ant's Share	Land-lord's Share	Ten-ant's Share	Land-lord's Share	Ten-ant's Share	Land-lord's Share	Ten-ant's Share	Land-lord's Share	Ten-ant's Share	Land-lord's Share	Ten-ant's Share	Land-lord's Share	Ten-ant's Share
Capital investment																		
Land	All	None	All	None	All	None	All	None	All	None	All	None	All	None	All	None	All	None
Buildings	All	None	All	None	All	None	All	None	All	None	All	None	All	None	All	None	All	None
Machinery	None	All	All	None	None	All	None	All	None	All	None	All	None	All	½	½	All	None
Feed and supplies	Part	Part	Part	Part	Part	Part	Part	Part	Part	Part	Part	Part	Part	Part	½	½	Part	Part
Work stock	None	All	All	None	None	All	None	All	None	All	None	All	None	All	½	½	All	None
Dairy stock	None	All	All	None	½	½	All	None	All	None	All	None	All	None	½	½	All	None
Sheep	None	All	No Sheep		No Sheep		No Sheep		No Sheep		No Sheep		No Sheep		½	½	All	None
Other livestock	None	All	None	All	None	All	None	All	None	All	None	All	None	All	½	½	All	None
Produce																		
Livestock increase	None	All	All	None	½	½	All	None	All	None	All	None	All	None	½	½	All	None
Milk	None	All	½	½	1/3	2/3	½	½	½	½	½	½	½	½	½	½	½	½
Sheep and wool	None	All	No Sheep		No Sheep		No Sheep		No Sheep		No Sheep		No Sheep		½	½	½	½
Other livestock and products	None	All	None	All	None	All	None	All	None	All	None	All	None	All	½	½	None	All
Corn	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½
Wheat	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½
Hay, corn, silage, oats, and barley	None	All	½	½	1/3	2/3	½	½	½	½	½	½	½	½	½	½	½	½
Tomatoes	½	½	2/3	1/3	No Tomatoes		No Tomatoes		No Tomatoes		No Tomatoes		No Tomatoes		½	½	½	½
Other selling crops	½	½	2/3	1/3	1/3	2/3	½	½	½	½	½	½	½	½	½	½	½	½
Other income	None	All	None	All	No other income		No other income		No other income		No other income		No other income		No other income		No other income	
Expenses																		
Labor	None	All	None	All	None	All	None	All	None	All	None	All	None	All	None	All	None	All
Board of hired labor	None	All	None	All	None	All	None	All	None	All	None	All	None	All	1/3	2/3	None	All
Repairs, machinery	None	All	All	None	None	All	None	All	None	All	None	All	None	All	All	None	All	None
Repairs, buildings, and fences	All	None	All	None	All	None	All	None	All	None	All	None	All	None	½	½	All	None
Feed	None	All	½	½	None	All	½	None	½	½	½	½	½	½	½	½	2/3	1/3
Seed	½	½	2/3	1/3	1/3	2/3	All	None	All	None	All	None	All	None	½	½	2/3	1/3
Fertilizer	½	½	2/3	1/3	1/3	2/3	All	None	All	Part	All	None	All	None	½	½	2/3	1/3
Lime	All	None	No Lime		1/3	2/3	Part	All	None	None	No Lime		No Lime		No Lime		No Lime	
Insurance	Part	Part	All	None	Part	Part	None	All	All	None	All	None	All	None	All	None	All	None
Depreciation, machinery	None	All	All	None	None	All	All	None	½	½	½	½	Part	Part	½	½	All	None
Depreciation, buildings	All	None	All	None	All	None	All	None	Part	Part	All	None	All	None	All	None	All	None
Decrease in feed and supplies	Part	Part	Part	Part	Part	Part	Part	None	All	None	Part	Part	Part	Part	½	½	Part	Part
Taxes, real estate	All	None	All	None	All	None	All	Part	All	None	All	None	All	None	All	None	All	None
Taxes, personal	Part	Part	All	None	Part	Part	Part	None	Part	Part	Part	Part	Part	Part	½	½	2/3	1/3
Other expenses	None	All	None	All	None	All	All	None	All	None	None	All	None	All	½	½	2/3	1/3

fertilizer, and seed that was used in planting crops for sale. The tenant purchased all grass, hay, oat and barley seed. The landlord purchased the fence wire and lime, and the tenant repaired the fences and applied the lime. All other expenses were paid for by the tenant. Interest on investment at 5 per cent was charged to the landlord on land and buildings and to the tenant on livestock and machinery.

The remaining 15 per cent of all tenant farms had either crop or crop and livestock-share leases. The leases were based on the amount each party furnished toward the entire farm enterprise.

Inequality of the Present Leasing System

The United States, in general, is faced with the problem of making a more equitable distribution of income between the tenant and landlord. In the South, in general, the tenant receives a very small income and he is in need of relief. However, on the tenant farms surveyed in Maryland, the tenants received a much larger proportion of the income than the landlords. The landlord-tenant leases were more equitable when cash-grain was the principal type of farming, but since dairying has become the major type of farming, the landlords have receivedless than their share of returns. As previously mentioned, the change in type of farming came as a result of the depression because farmers could no longer depend upon grain farming when the price of grains was so low. Dairying is a source of more regular income to the tenant and makes farming more diversified, thereby eliminating part of the risk. The landlord does not share in the benefit of dairy farming, but must depend on cash-grains and truck crops, which fluctuate in price widely in comparison with milk. It does not seem to be an equitable contract when one party receives all the returns from the dairy enterprise and does not make any cash

contribution toward the upkeep of the building in which the dairy cows are housed. The landlord receives nothing from the dairy enterprise, yet he is expected to build, maintain, and keep the dairy barn, silo, and milk house in condition to pass the rigid sanitary requirements of the Philadelphia milk market.

The inequality in labor income between the landlords and tenants is shown in Table 64. The landlord's investment was much larger than the tenants, because on all tenant farms the landlord owned the land and buildings and on a few of the tenant farms the landlord owned the livestock, or machinery, or livestock and machinery in addition to the land and buildings.

Total, cash, and non-cash receipts and expenses were larger for tenants than for landlords on the average, high and low income tenant-operated farms.

Tenants on the average and high income farms received a greater share of the farm income than the landlords, but less on the low income tenant farms.

The larger investment by the landlord made it necessary to deduct a larger interest charge from the landlord's gross income than from the tenant's to get labor income for each.

The tenant's labor income was larger than the landlord's on the average, high, and low income tenant farms. The tenant's labor income included the labor of the family in addition to the operator. Labor earnings is a better measure for comparison of tenant and landlord incomes on tenant farms because it includes products used for family living in addition to labor income. The tenant's family labor earnings were greater than the landlord's on the average, high and low income tenant farms.

Table 64. Summary of the Landlord's and Tenant's Share on Tenant Farms

Item	All Farms (55)		High 14 Farms*		Low 14 Farms**	
	Landlord's Share	Tenant's Share	Landlord's Share	Tenant's Share	Landlord's Share	Tenant's Share
Total investment	$14,709	$4,407	$16,469	$5,456	$15,300	$3,344
Receipts	1,859	4,050	2,311	5,648	1,938	3,082
Cash	1,853	3,493	2,262	4,420	1,944	2,836
Non-cash	6	557	49	1,228	-6	246
Expenses	910	2,721	926	3,179	1,193	2,751
Cash	778	1,979	733	2,307	864	1,927
Non-cash	132	742	193	872	329	824
Gross income	949	1,329	1,385	2,469	745	331
Interest on investment	735	220	824	273	765	167
Labor income	214	1,109	561	2,196	-20	164
Products used for family living	0	392	0	401	0	401
Labor earnings	$ 214	$1,501	$ 561	$2,597	$ -20	$ 565
Return on investment						
Dollars	949	829	1,385	1,969	745	-169
Per cent	6.5	18.8	8.4	36.1	4.9	-5.1

* Farms with highest farm labor income on tenant farms.
** Farms with lowest farm labor income on tenant farms.

Per cent return on investment was greater for tenants on the average and high income tenant farms but smaller on the low income tenant farms.

Comparison of Tenant and Owner-Operated Farms

Much of the land on the Eastern Shore, especially water-front property, is owned by northern people. Many resident landlords own more than one farm and the demand for good tenants is great. The majority of resident and non-resident landlords consider the farm only as an investment. However, the owner-operators are faced with the problem of making the farm pay.

It has been stated that tenancy is conducive to soil erosion by too intensive pasturing and growing of soil-depleting crops. No information was collected on the intensity of pasturing on the farms surveyed, but due to the type of lease a larger per cent of the crop acreage was devoted to the growing of corn and wheat and a smaller per cent to the growing of hay on tenant than on owner-operated farms.

Table 65 shows that tenant-operated farms had a larger acreage and a larger per cent of the land in crops. Tenant farms also had more cows than owner-operated farms, but less production per cow and lower yields of corn, wheat, and hay. Total milk produced on owner-operated farms was greater even though fewer cows were kept.

Tenant farms had a larger investment due to a larger investment in real estate. Milk sales were slightly higher on owner-operated farms, but crop sales and livestock inventory increase were much larger on tenant-operated farms, which accounted for larger total receipts. Total expenses were $300 greater on tenant farms, yet they had $820 larger farm income. The labor income on tenant farms was $1,322, while it was

Table 65. Comparison of Tenant, Owner, and All Farms

Item	Tenant Farms	Owner Farms	All Farms
Number of farms	55	73	128
Acres per farm	261.5	218.6	237.1
Acres in pasture	47.4	40.7	43.6
Acres in other land	58.5	63.0	61.1
Acres in crops	155.6	114.9	132.4
Corn	40.9	28.0	33.5
Wheat	70.0	41.2	53.6
Hay	25.4	25.5	25.9
Yield of corn per acre (bushels)	40.5	46.1	43.2
Yield of wheat per acre (bushels)	19.8	19.9	19.9
Yield of hay per acre (tons)	.9	1.2	1.1
Number of dairy cows	18.0	17.2	17.5
Number of horses and mules	7.6	6.0	6.7
Number of chickens	119.8	123.1	121.6
Pounds of milk produced	4717.0	5000.5	8553.5
Pounds of milk produced per cow	84,904.9	86,009.3	4,880.1
Total investment	$ 19,116	$ 16,072	$ 17,380
Real estate	14,308	11,616	12,773
Livestock	2,835	2,454	2,618
Machinery and equipment	1,209	1,090	1,141
Feed and supplies	764	912	848
Total receipts	$ 5,909	$ 4,771	$ 5,260
Milk	1,743	1,900	1,833
Dairy stock	224	197	208
Eggs	153	184	170
Poultry stock	181	254	223
Other livestock	197	163	178
Crops	2,791	1,626	2,127
Livestock inventory increase	563	66	459
Miscellaneous	57	381	62
Total expenses	$ 3,631	$ 3,313	$ 3,449
Labor	687	665	674
Repairs	210	183	194
Feed	516	542	531
Fertilizer and lime	392	288	333
Fuel and oil	193	155	171
Taxes	211	159	181
Board of hired labor	364	324	341
Decrease in feed and supplies	320	341	332
Depreciation	269	247	257
Miscellaneous	469	409	435
Farm income	$ 2,278	$ 1,458	$ 1,811
Interest on investment	956	803	869
Farm labor income	$ 1,322	$ 655	$ 942
Products used for family living	386	397	392
Farm labor earnings	$ 1,708	$ 1,052	$ 1,334
Per cent return on investment	9.3	6.0	7.5

only $655 on owner-operated farms, or $667 less. The return on investment on tenant-operated farms was 9.3 per cent, whereas it was only 6 per cent on owner-operated farms.

From the analysis of tenant and owner-operated farms, it is shown that tenants are interested in immediate returns, rather than looking forward to future returns. The cropping practices and continual disagreement between tenants and landlords, frequently causing tenants to stay for only a short time, should cause less returns to tenant farms over a period of time. According to the Census of Agriculture for 1930, more than one-third of the tenants stayed on the farm for one year or less, more than one-fourth stayed from 2 to 4 years, more than one-fifth stayed 5 to 9 years and less than one-fifth stayed over 10 years. Tenants related to the owners tend to stay on farms much longer than the non-related tenants because they hope to inherit the farms.

In general, tenants have as much initiative as owners. They are usually younger and have larger families, but due to their migratory habit, they are not as well educated as owners. Tenancy is generally the result of insufficient funds on the part of the tenant to own a farm. However, the tenant farmers on the Upper Eastern Shore of Maryland are fairly well satisfied with the present leasing system, but would like for the landlord to keep the dairy equipment in better repair.

Suggested Improvement of Lease Contracts and Landlord-Tenant Relationships

The present leasing system will be difficult to change, but the tenant-landlord relationships may be made better by modifying the lease. By this measure of improvement the tenant would probably be more satisfied and remain on the farm for a longer period. By greater satisfaction

to both parties, long-time land-use adjustments could be made, whereby soil fertility would be maintained by the use of crop rotation, manure, and fertilizer. A more equitable division of farm returns could be made, if both parties would work cooperatively together and it would likely result in each making greater returns.

Written agricultural leases that are brief and are simple in language should replace verbal agreements. If the tenant makes improvements, he should remove them at the expiration of the lease unless the improvements are immovable, in which case the landlord should compensate the tenant for those improvements. The tenant should compensate the landlord for any deterioration or damage due to the tenant's operation of the farm and the landlord should have power to prevent further damage or waste. Either party should be given sufficient notice as to the termination of the contract; should either party fail in this element of time he should be liable for damages in equity. Certain parts of the contract should be flexible enough to take care of serious crop failure or fall in prices, in order that the contract shall not terminate for these causes.

The present leasing system requires very little modification to make the lease more equitable. Most of the difficulty between the landlord and tenant has arisen because the landlord has refused to keep the dairy barn and milk house equipped to meet the requirements of the Philadelphia Health Department. It is suggested that the tenant should pay the landlord a cash rent for the use and occupation of the dairy barn, silo, and milk house; and the landlord should maintain the dairy equipment suitable to secure the health permit. The rate of payment should be figured at 8 or 10 per cent (or any other agreed figure) of the value of dairy equipment. The payments should be made at the end

of each month unless agreed upon under different terms. The 1936 dairy records show that a more even distribution of returns could have been obtained between landlords and tenants if the tenant had paid a cash rental on dairy equipment, and the two parties would likely have been more satisfied. It should be agreed that the tenant should pasture not more than a specified number of livestock only on land designated as pasture land. The amount and kind of fertilizer and lime should be mutually agreed upon by the two parties, but sufficient amounts should be applied. The acreage of different crops to be grown and the rotation and pasturing practices should be agreed upon by both parties. In case of disagreement between the two parties on any of the problems concerning division of the returns, joint holdings at the termination of the lease, or the amount and kind each party should furnish, then three disinterested parties who are well acquainted with the same type of problem should be called in to make a proper settlement.

SUMMARY OF ALL FARMS

This report covers the second year's results of a study of 128 dairy farms on the Upper Eastern Shore of Maryland. The data are for the year 1936. This study was made to determine the organization of these dairy farms, the factors affecting farm profits, and the relative status of the landlords and tenants on the tenant farms. A general summary of the farms is presented in Table 66.

Organization

The average number of acres per farm was 237.1; of which 132.4 acres were in crops; 43.6 acres, in pasture; and 61.1 acres, in other land. The average number of cows per farm was 17.5; milk production per cow averaged 4,880.1 pounds; total farm investment was $17,380; farm receipts were $5,260; farm expenses were $3,449; farm income was $1,811; interest on investment was $869; and farm labor income averaged $942.

Total receipts were apportioned among the various sources of receipts as follows: dairy, 45.0 per cent; cash-grain, 28.9 per cent; other crops, 11.6 per cent; poultry, 7.6 per cent; other livestock, 5.8 per cent; and miscellaneous, 1.2 per cent.

The most important sources of farm receipts were milk, wheat, and corn. The most important farm expenses were labor, feed, board of hired labor, fertilizer and lime, decrease in feed and supplies, and depreciation.

Factors Affecting Farm Labor Income

Production index, gross farm receipts, milk production per cow, milk sales per cow, and livestock index were the factors that had the

Table 66. Summary of Farm Organization

Item	All Farms	High 25 Per Cent	Low 25 Per Cent
Number of farms	128	32	32
Acres per farm	237.1	277.7	240.6
Acres in pasture	43.6	44.1	48.7
Acres in other land	61.1	76.1	62.1
Acres in crops	132.4	157.5	129.8
Corn	33.5	37.0	32.6
Wheat	53.6	66.8	47.4
Hay	25.9	30.3	24.8
Yield of corn per acre (bushels)	43.2	45.6	38.8
Yield of wheat per acre (bushels)	19.9	21.1	18.4
Yield of hay per acre (tons)	1.1	1.1	1.1
Number of dairy cows	17.5	21.3	16.9
Number of horses and mules	6.7	6.7	6.8
Number of chickens	121.6	126.5	101.0
Pounds of milk produced	85,535	122,081	70,994
Pounds of milk produced per cow	4,880.1	5,732.4	4,195.4
Total investment	$ 17,380	$ 20,518	$ 17,156
Land	7,386	8,610	7,282
Buildings	5,387	6,187	5,602
Livestock	2,618	3,256	2,413
Machinery and equipment	1,141	1,423	1,010
Feed and supplies	848	1,042	849
Total receipts	$ 5,260	$ 7,805	$ 3,962
Milk	1,833	3,000	1,350
Dairy stock	208	211	196
Eggs	170	203	95
Poultry stock	223	273	226
Other livestock	178	193	163
Crops	2,127	2,719	1,807
Livestock inventory increase	459	1,090	122
Miscellaneous	62	116	3
Total expenses	$ 3,449	$ 4,113	$ 3,718
Labor	674	897	725
Repairs	194	208	215
Feed	531	658	515
Fertilizer and lime	333	424	361
Fuel and oil	171	231	161
Taxes	181	215	174
Board of hired labor	341	402	384
Decrease in feed and supplies	332	303	464
Depreciation	257	307	248
Miscellaneous	435	468	471
Farm income	$ 1,811	$ 3,692	$ 244
Interest on investment	869	1,026	857
Farm labor income	$ 942	$ 2,666	$ -613
Products used for family living	392	387	418
Farm labor earnings	$ 1,334	$ 3,053	$ -195
Per cent return on investment	7.5	15.6	-1.5

greatest influence on farm profits. Gross farm receipts were more directly related to farm profits than total animal units, total productive animal units, total milk production, and total milk sales. Production index was the best measure of crop and livestock yields. Milk production per cow was the best index of efficiency of dairy production, but seasonal production and milk prices were in direct relation to farm profits. The best measures of labor and machinery efficiency were milk sales per man and machinery investment per crop acre, respectively.

The most profitable farms were more highly specialized in dairying. They received relatively larger receipts from dairying, but relatively less receipts from crops than the least profitable farms, which shows that larger income is derived through utilization of home-grown feeds on the farm than by sale of these feeds, even when the price of feeds is relatively high. The manure from the animals that are fed on the farms is useful in building up the soil, and less expense is involved in handling of feeds by utilizing them on the farm.

Status of Tenancy in the Area

Nearly all of the 55 tenant farms were operated on the fifty-fifty crop-share lease basis. Due to an increase in number of livestock on tenant farms and a decrease in cash crop acreage, the tenants received a much larger income in 1936 than the landlords.

Some friction has developed between the tenants and the landlords, because the landlords have not kept the dairy equipment in a suitable state of repair to meet the sanitary requirements of the Philadelphia Health Department. The landlords object to repairing

the dairy equipment when the tenants, in general, receive all the returns from livestock.

An equitable agreement has been proposed, whereby the tenants are to compensate the landlords for maintaining the equipment in good condition. If tenant farmers in this area are to continue in the dairy business, an equitable agreement will have to be adopted or an increasing number of dairy farms will probably lose their health permit.

RECOMMENDATIONS

1. Dairying is a valuable asset to farmers of the Upper Eastern Shore Area and should be continued in conjunction with cash-grain farming. Dairying provides for labor the year around and does not conflict with crops and other livestock production in the use of labor.

2. Farmers should make better use of their pasture land. Pasture provides a cheap, excellent feed for dairy cows, but it should be maintained and improved by the use of fertilizer and lime.

3. It should be the aim of every farmer to increase the milk production per cow by using better breeding, feeding, and management methods, and by making more efficient use of pasture. It should be a further aim of every farmer to increase crop production per acre by applying more fertilizer and lime, by practicing crop rotation, and by maintaining soil fertility.

4. More attention should be given to the better animals and better land. Poor animals should be eliminated as quickly as possible and replaced by better animals. Marginal and sub-marginal land should not be cultivated, but should be put back into woodland or permanent pasture.

5. Milk production should be maintained during the winter months when the price of milk is high. More feed may be required to maintain a more constant milk production, but the returns would be greater. Home-grown feeds, especially corn silage and barley, are cheap, excellent feeds and should be more efficiently utilized. More alfalfa and barley should be grown, which would result in cheaper feed and higher milk production.

6. Labor expense should be kept at a minimum. The operator and his family should do as much of the work as possible and farmers should trade labor to reduce expenses. A sequence of crops should be arranged to eliminate the possibility of labor on one crop conflicting with labor on another crop. The labor should be distributed as evenly throughout the year as possible and the work should be done well and on time.

7. Farmers on small farms should make special effort to produce as large an output as possible by intensifying production or by operating additional land. Large farms should maintain or increase their farm business by using labor-saving machinery. Land, buildings, machinery, and equipment should be used to full capacity to attain maximum efficiency.

8. A more equitable agreement should be made between the landlord and tenant. It is recommended that the landlord keep all the dairy equipment suitable to pass inspection and that the tenant compensate him for this by a cash payment.

9. Cooperation among the farmers should be stressed, because the results from cooperation thus far have been very worthwhile. The independence of each dairy farmer depends upon his cooperation with his fellow farmers.

10. Simple, accurate records of all farm operations should be kept in order to ascertain which enterprises are yielding the highest returns to the farmers. By keeping records, the farmer has a better knowledge of his business and it is possible for him to make a better enterprise balance on his farm, increase efficiency, and receive a greater farm profit.

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AGREEMENT OF LEASE

Agreement between _____ (Landlord) and

_____(Tenant).

Date _____

The landlord hereby agrees to let his farm known as _____, containing _____ acres, more or less, and situated near _____, in _____ District of _____ County, Maryland; and the tenant agrees to let said farm under the following conditions:

This agreement shall begin on _____ day of _____, _____, and shall remain in force for _____ year (s) unless terminated by either party upon six months written notice to the other party prior to the termination on _____ day of _____.

Section A. The Landlord Agrees:

1. To furnish the land, buildings and other improvements, and pay the taxes and insurance on the same.

2. To furnish a dairy barn equipped with stanchions for _____ cows, a silo and a milk house, all of which shall be satisfactory for permit to be obtained on the Philadelphia milk market, and meeting all of its requirements.

3. To furnish, or pay for, one-half of all seeds other than for hay and pasture and one-half of fertilizer.

4. To furnish all materials required to keep fences and gates in proper state of repair, and to furnish all materials and skilled labor for repairs on buildings.

5. To furnish free to the tenant the use of a house on said farm, together with a family garden plot, fire wood for family use only, and _____ acres to care for not more than _____ hogs, _____ chickens, and _____ other poultry.

6. To furnish or pay for one-half of all containers used in marketing crops.

Section B. The Tenant Agrees:

1. To farm said farm in a farmer-like manner, properly caring for all crops.

2. To furnish all farm machinery, all work stock, and all labor (including hired labor other than skilled labor for repairing buildings) to operate the farm, keep the fence rows and hedges properly cut, open the ditches, and repair the fences and roads.

3. To furnish, or pay for, all dairy equipment not stated in Section A, No. 2, all of the feed purchased for livestock, one-half of all fertilizer, all seed for hay and pasture and one-half of all other seeds, and taxes and insurance on his share of the personal property.

4. To furnish, or pay for, the twine and the threshing and one-half of the containers used in marketing.

5. To pay to the landlord for the use and occupation of the dairy barn, milk house and silo an annual rental, in amount $_____, (figured at ten per cent of the value of dairy equipment stated in Section A, No. 2), the same to be paid for in equal monthly installments of $_____, the same payable at the end of each calendar month, beginning in the month of _____, during the time of this tenancy.

6. To deliver the landlord's share of the crops to the barn, or the local market, or the nearest shipping point not exceeding _____ miles, as the landlord may direct.

7. To give the landlord access on the premises for the purpose of examining the care and condition of the farm.

Section C. The Landlord and Tenant Mutually Agree:

1. To share equally all crops grown except those specified in Section C, No. 2.

2. That the tenant shall be authorized to pasture _____ head of cattle and young stock, and all necessary work stock on the land designated as "pasture land", to use all hay and straw produced on the farm and to return all manure to the land as directed by the party designated in Section C, No. 5.

3. That the landlord shall furnish _____ tons of lime annually and the tenant shall apply said lime to the fields designated by the landlord.

4. That the amount and kind of fertilizer to be applied to each crop shall be determined by _____.

5. That the acreage of the different crops to be grown and the rotation and pasturing practices shall be determined by _____.

6. That, at termination of the lease all property owned jointly shall be divided equally between the landlord and tenant, if said agreement can be reached. In case they cannot agree, each shall select a disinterested party and these two select a third disinterested party, and these three parties shall make an appraisal and division of the property, giving the landlord and tenant each his respective share.

_____ Witness _____ (Seal)
LANDLORD

_____ Witness _____ (Seal)
TENANT