

A Farm Business Report
Relating to 18 Farms Located in Phillips, Yuma, and
Washington Counties, Northeastern Colorado
1940

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Introduction.--This report represents a study of farm businesses located on first-grade dry-farming land in northeastern Colorado. It is presented in such a way that the farmers who cooperated in developing the project may discover possible changes in their farm businesses which would make possible an increase not only in money income but also in the real income of the farmer and his family. Other farmers who live in this particular type-of-farming area ^{2/} of approximately $1\frac{1}{2}$ million acres may find the data in this report helpful. Obviously, one should not base his decisions merely on one annual report. Climatic conditions are favorable in some farming areas during some years and unfavorable during other years. Changes in prices often favor one area in comparison with another. For these and other reasons it has been considered desirable to carry on a farm account project for a series of years. This is the fourth report of this particular series for this area in recent years.

All information given in the Farm Business Section of this publication pertains to the farm businesses as a whole. That is, the records of the farm operator and the landlord (if there was a landlord) were considered as one record. Each farm operator who cooperated in this project may find information pertaining to his share of earnings on the farm, as well as the landlord's share, on pages 38 and 39 of his farm account book.

For purposes of comparison farms have been classified into 2 groups, - the most-profitable and least-profitable. The basis for classification was the rate earned on the total farm investment. The investment was assumed to consist of each farmer's estimate of the value of all farm land operated, improvements (excluding farm residence), livestock, machinery, feeds, grains, and growing crops on the farm. ^{3/} The rate earned on the investment was calculated after deducting from the net farm gain (receipts and inventory increases less expenses and inventory decreases in the account book) an arbitrary wage of \$50 per month for the labor of the operator and of members of the family who actually contributed services on the farm. Farm products used in the farm home and the imputed rental value of leased farm residences were not considered as being farm business receipts. Expenses pertaining to the residences of the farm operators were not included as farm business expense.

Besides using the "rate earned on the farm investment" as a measure of the success of the farm operator, we use also another measure, the "labor and management wage." This wage represents an amount which the farm operator received after

^{1/}Acknowledgment is made of the cooperation of the farmers who submitted their farm business records for this report and to the county agricultural agents: C. L. Harp of Phillips County, B. H. Trierweiler and H. F. Alishouse of Yuma County, and Charles Giles, Jr., of Washington County.

^{2/}See "Type of Farming Areas in Colorado," Colo. Exp. Sta. Bul. 418 (out of print)

^{3/}These values were reviewed by a fieldman in the presence of individual farmers.

deducting from the net farm gain an assumed rate of interest on the investment and after deducting an imputed wage for members of the family (excluding operator) who performed work on the farm.

Cash Income and Expenses, Inventory Changes, and Net Farm Gain:

The farm account cooperators received an average cash income of \$1,952 during the year 1940 (see table 1). After considering inventory changes the net farm gain was \$2,302 in 1940. This amount was slightly less than in 1939 but greater than during the years 1938 and 1937. The increase in the value of farm property in 1940 was due largely to an increase in the investment in livestock and machinery.

The net farm gain of \$2,302 represents the amount that the farmer had for interest on an estimated value of farm property of \$23,635, for his wages and profits as a laborer and manager of the farm business, and for unpaid family labor. As indicated previously, these figures pertain to the farm businesses as a whole.

Other observations relating to table 1 are: (1) There has been a consistent increase in the importance of livestock as a source of income on the varying number of farms where records have been kept since 1937; (2) the major source of income, however, has been the production of crops; (3) net machinery and equipment expenses were about \$750 per farm in 1940 or approximately equal to expenditures during the previous 3 years despite an increase of more than 20 percent in the number of acres under cultivation per farm, (farm cultivation practices and climatic conditions, as well as machinery operating expenses, affect the amount of these expenditures); (4) for the first time in 4 years there was an increase in the investment in farm improvements during the year, although the increase was slight.

Distribution of Investments, Receipts, Expenses, and Earnings for "Your" Farm, the Average, and the 6 Most- and 6 Least-Profitable Farms:

Each farmer who cooperated in this study may compare certain characteristics of his farm business with those of other farm businesses by observing table 2. A few comparisons concerning the average figures for 18 farms, the 6 most-profitable and the 6 least-profitable may be of interest. Obviously, such comparisons have definite limitations, especially when such comparisons are based upon averages.

The average investment in the farm businesses amounted to \$23,635. (See Table 2). The farmers who received the highest rate of return on the investment had an investment of \$29,900, while those farmers who received the lowest rate of return had less than one-half as much, or \$13,552, invested. The difference in investment was due primarily to the amount and value of land operated by these different groups.

Total receipts and inventory increases amounted to \$4,000 for the 18 farms, \$6,666 for the most-profitable group, and \$1,575 for the least profitable group. The major source of the difference between the gross receipts on the most- and least-profitable farms was the receipts from sales of crops, being \$4,544 and \$529, respectively. Those farmers having the highest rate of return from the total farm investment also had a greater amount of income from livestock.

Total expenses and inventory decreases amounted to \$1,698 for the average of the 18 farms, \$2,226 for the most-profitable group, and \$1,028 for the least-profitable. The most-profitable group expended \$525 more for hired labor, \$466 more for machinery and equipment expenses, and slightly more for crop expenses, taxes, and farm improvements than did the least-profitable group. The latter group purchased more feed for livestock.

Table 1.-Cash income and expenses, inventory increases and decreases, and net farm gain (excluding interest paid) for 18 farms located in Phillips, Washington, and Yuma Counties, northeastern Colorado, 1940, as compared with similar data for 20, 26, and 23 farms in the same type-of-farming area during the years 1939, 1938, and 1937, respectively (in dollars per farm).

Item	Cash								Inventory							
	Income				Expenses				Increases				Decreases			
	1940	1939	1938	1937	1940	1939	1938	1937	1940	1939	1938	1937	1940	1939	1938	1937
Livestock	\$1,661	\$1,555	\$1,217	\$1,214	511*	303*	221*	152*	340	54	42	--	--	--	--	22
Feed, grain, crops	2,919	2,089	2,071	3,128	385	365	177	181	--	808	--	--	157	--	174	437
Machinery & equip.	141	171	105	261	1032	1013	914	1421	143	110	17	380	--	--	--	--
Farm improvements	1	1	--	1	147	96	99	125	24	--	--	--	--	18	16	12
Labor off farm	19	67	39	58	--	--	--	--	--	--	--	--	--	--	--	--
Miscellaneous	12	26	6	40	18	11	13	17	--	--	--	--	--	--	--	--
Livestock expense <u>1/</u>	--	--	--	--	27	27	22	8	--	--	--	--	--	--	--	--
Crop expense <u>2/</u>	--	--	--	--	192	207	202	215	--	--	--	--	--	--	--	--
Hired labor	--	--	--	--	254	202	213	231	--	--	--	--	--	--	--	--
Taxes <u>3/</u>	--	--	--	--	235	236	169	191	--	--	--	--	--	--	--	--
TOTAL	4,753	3,909	3,438	4,702	2801	2460	2030	2541	507	972	59	380	157	18	190	471

Summary

	1940	1939	1938	1937
Net cash income.....	\$1,952	\$1,449	\$1,408	\$2,161
Net inventory increase.....	350	954	--	--
Net inventory decrease.....	--	--	131	91
Net farm gain (in account book, receipts less expenses).....	\$2,302	\$2,403	\$1,277	\$2,070

* Livestock bought.

1/ Veterinary bills, medicine, etc.

2/ Custom work, seed, twine, and crop insurance.

3/ Real estate and personal taxes. Sales taxes included with purchases.

Table 2.- Farm investment, receipts, expenses, and earnings on 18 farms located in Phillips, Washington, and Yuma Counties, Northeastern Colorado, 1940.

Item	Your farm	Average of 18 farms	6 Most-profitable farms <u>1/</u>	6 Least-profitable farms <u>1/</u>
Investments:				
Land	\$	\$15,482	\$18,565	\$ 8,069
Farm improvements		2,443	3,480	1,944
Horses		146	119	215
Cattle		977	869	772
Hogs		114	222	46
Sheep		64	---	192
Poultry		173	296	160
Productive livestock <u>2/</u>		(1,328)	(1,387)	(1,170)
Livestock--Total		(1,474)	(1,506)	(1,385)
Farm machinery and equipment		1,874	2,523	1,353
Farm share of auto <u>3/</u>		152	218	51
Feed, grain and crops		2,210	3,608	750
Total investments		<u>23,635</u>	<u>29,900</u>	<u>13,552</u>
Receipts--Net Increases				
Horses		20	7	53
Cattle		517	611	380
Hogs		237	540	64
Sheep		44	---	134
Poultry		66	83	92
Egg sales		344	552	334
Dairy sales		304	165	155
Livestock--total		1,532	1,958	1,212
Feed, grain and crops		2,437	4,544	329
Labor off farm		19	35	18
Miscellaneous		12	18	16
Total receipts and net increases		<u>4,000</u>	<u>6,555</u>	<u>1,575</u>
Expenses--Net Decreases				
Farm improvements		122	164	70
Horses		24	32	19
Misc. livestock decreases		19	45	8
Machinery and equipment		748	908	442
Feed, grain and supplies		60	---	182
Livestock expense		27	31	24
Crop expense		192	220	105
Hired labor		254	532	7
Taxes		234	259	163
Miscellaneous		18	35	8
Total expenses and inventory decreases		<u>1,698</u>	<u>2,226</u>	<u>1,028</u>

Table 2 continued

Item	Your farm	Average of 18 farms	6 Most-profitable farms	6 Least-profitable farms
Total receipts and inventory inc.	\$	\$4,000	\$ 6,555	\$ 1,575
Total expenses and inventory dec.		<u>1,698</u>	<u>2,226</u>	<u>1,028</u>
Receipts and inventory increases less expenses and inventory decreases-----		2,302	4,329	547
Total unpaid labor		<u>614</u>	<u>682</u>	<u>614</u>
Net income from investment, labor and management-----		1,688	3,647	-67
Rate earned on investment-----		<u>7.14%</u>	<u>12.20%</u>	<u>-.05%</u>
Return to capital and operator's labor and management		2,244	4,247	533
5% interest on investment		1,182	1,495	678
Labor and management wage		<u>1,062</u>	<u>2,752</u>	<u>-145</u>

- 1/ Basis for classification-- rate earned on investment of whole farm business.
- 2/ All livestock except horses.
- 3/ The share indicated represents 52, 54, and 50 percent of the total auto investment on the average, most-profitable, and least-profitable farms, respectively.

The cash receipts and inventory increases less the cash expenses and inventory decreases (net farm gain) amounted to \$2,302 for the average of 18 farms, \$4,329 for the 6 most-profitable, and \$547 for the 6 least-profitable farms. These calculated figures do not include any consideration for imputed income or actual expenses on or depreciation of farm residences or any consideration of farm products used in the farm home. These will be considered later. After deducting from these amounts an arbitrary wage of \$50 per month for the operator's and family labor and \$8 per month for the estimated cash outlay for groceries for hired labor we find that the average rates earned on the whole farm investments were 7.14, 12.20, and -0.05 percent for the average, most-profitable, and least-profitable farms, respectively. Thus the farm operators if they owned all the land they were farming and considered the land worth an average of \$17.43 per acre, as was estimated by the farm operators, would have earned \$50 per month for their labor and the labor of members of the family besides 7.14 percent on the estimated investment. If a higher wage were assumed, obviously the calculated rate earned would have been less. This is merely one way of visualizing the income from the average farm business for the year 1940.

Another way of gaining a perspective of the farm income situation is to observe the differences in the labor-and-management wages of the farm operators. The labor-and-management wage is obtained after deducting an arbitrary interest rate of 5 percent on the investment besides an arbitrary wage of \$50 per month for family labor (other than operator) from the net farm gain (receipts and inventory increases less expenses and inventory decreases). The estimated cash expenses for board for hired labor are also deducted. The calculated labor-and-management wage amounted to \$1,062, \$2,752, and a "minus" \$145 for the average, most-profitable, and least-profitable group of farmers, respectively.

A comparison of the size of business, kinds of crops grown, labor expenses, power and machinery expenses, net returns from livestock, prices received for major farm products, and other items on the most-profitable, average, and least-profitable farms.

Introduction.- Information given in table 3 has been assembled for the purpose of attempting to answer the following question which has been asked many times by interested farmers: How does my farm business compare with others? In order to keep information concerning individual farms strictly confidential it has been necessary to use averages. It has been fully recognized that "average" figures have definite limitations. Furthermore, due to the difficulties involved in isolating the original causes of variations in farm incomes no attempt has been made to accomplish the task. Comparisons have merely been made of various items pertaining to the farm businesses as a whole, the one-third most-profitable, and one-third least-profitable farms. An explanation of comparisons pertaining to major items follows:

Size of farm.- The most-profitable group of farmers operated farm units averaging 909 acres of which 87 percent (or 793 acres) was under cultivation. The least-profitable group averaged 592 acres of which 71 percent (or 422 acres) was under cultivation. Acres in farm or in crop land indicate to some degree the size of the farm business in this farming area because the major source of income is the production of crops. However, the productivity of the land is another factor determining the size of the business-- the greater the capacity of land to make high yields the greater the capacity to make more income. An 800-acre farm that has the capacity to produce 20 bushels of wheat per acre undoubtedly represents a larger farm business than an 800-acre farm that has land which will

Table 3.- Factors for comparing farm businesses in type-of-farming area 12 in Phillips, Washington, and Yuma Counties, northeastern Colorado, 1940.

	Your farm	Average of 18 farms	6 Most-profitable farms <u>1/</u>	6 Least-profitable farms <u>1/</u>
Size of farm, acres		837	909	592
Investment per acre:				
Land		\$17.43	\$19.14	\$13.12
Improvements		3.13	3.61	3.55
Total land and improvements		20.56	22.75	16.67
Productive livestock		1.81	1.63	2.23
Horses		.23	.10	.44
Machinery and equipment		2.42	2.90	2.29
Feed, supplies and crops		2.45	3.84	1.20
Total investment		<u>27.47</u>	<u>31.22</u>	<u>22.83</u>
Gross productive livestock receipts and/or net inventory increases per farm acre		2.09	2.32	2.38
Gross receipts and/or net increases from crops and other sources per farm acre		2.61	4.88	.68
Total farm receipts and/or net increases per farm acre		4.70	7.20	3.06
Farm cash expenses and/or net decreases per farm acre		2.07	2.41	1.99
Receipts less expenses per farm acre		2.63	4.79	1.07
Operator's and unpaid family labor per farm acre		.90	.81	1.23
Net income from investment per farm acre		1.73	3.98	-.16
Acres of farm land tilled	701	793	422	
Acres of tilled land in:				
Wheat	206	283	75	
Corn	97	190	35	
Barley	51	51	66	
Oats	16	4	6	
Other grains	39	21	50	
Cane	26	9	30	
Other roughage crops	35	16	72	
Miscellaneous crops	5	14	--	
Total all crops	<u>475</u>	<u>588</u>	<u>334</u>	
Tilled pasture	23	9	14	
Summer-fallow	203	196	74	

Table 3 continued

Item	Your farm	Average of 18 farms	6 Most-profitable farms	6 Least-profitable farms
Percent of farm land tilled		84	87	71
Percent of tilled land in:				
Wheat		29	36	18
Corn		14	24	8
Barley		7	6	16
Oats		2	1	1
Other grains		6	2	12
Cane		4	1	7
Other roughage crops		5	2	17
Miscellaneous crops		1	2	--
Total crops		<u>68</u>	<u>74</u>	<u>79</u>
Tilled pasture		4	1	3
Summer-fallow		28	25	18
Total percent		<u>100</u>	<u>100</u>	<u>100</u>
Crop yields per acre, bu.				
Wheat		7.6	11.3	7.6
Corn		17.8	22.6	4.8
Barley		6.3	12.6	2.3
Sale prices for				
Wheat, bu.		\$0.77	\$0.77	\$0.68
Corn, bu.		.59	.59	.57
Market hogs, per cwt.		5.16	5.46	4.71
Returns per \$100 feed fed to productive livestock <u>2/</u>		145.77	132.66	132.56
Returns per \$100 feed fed to productive livestock <u>3/</u>		163.24	146.60	155.14
Value of feed fed to productive livestock <u>4/</u>		1033.00	1437.00	896.00
Dairy sales per cow		65.17	47.19	32.56
Average number of cows milked		4.7	3.5	4.8
Man labor cost per tilled acre		1.21	1.48	1.44
Horse and tractor power and machinery cost per tilled acre		1.25	1.38	1.30
Total man labor and horse and tractor cost per tilled acre		2.46	2.86	2.74
Percent farms with tractors		100	100	100
Number of workable horses		1.6	1.5	2
Cost of horse feed per workable horse		29.69	44.55	28.31
Rate earned on investment		7.14	12.20	- .05

1/ Basis - rate earned on investment of whole farm business.

2/ Excluding value of livestock products consumed in the farm home. Returns from livestock may be different on various groups of farms because the farms were classified upon the basis of returns from all enterprises on the farm and not livestock only.

3/ Including value of livestock products consumed in the farm home.

4/ Based on 17 farms.

provide only 15 bushels per acre, assuming identical farm practices were desirable and actually performed. The fact that the land on the low-income farms was estimated to have a value per acre of only about two-thirds the value of the land on the high-income farms implies that the average size of the business of the low-income farms was actually smaller than the acres of land under cultivation indicated. The livestock enterprises were slightly larger on the most-profitable group of farms.

Crops and yields.-It is apparent after inspecting table 3 that the most-profitable group of farmers had a high percentage of land in wheat and corn and relatively small percentages in other crops.

The yield of the major crop, wheat, was 7.6, 11.3, and 7.5 bushels per acre for the average, for the 6 most-profitable, and for the 6 least-profitable farms, respectively. Corn yields were 17.8, 22.6, and 4.8 bushels per acre for the average, most-profitable, and least-profitable farms. Barley yields were only 2.3 bushels per acre on the least-profitable farms where a relatively high acreage of barley was planted. The barley yields were 12.6 bushels per acre on the small acreage of barley planted on the most-profitable farms.

Man-labor costs.- The actual and imputed cost for man labor amounted to \$1.21, \$1.48, and \$1.44 per tilled acre on the average, most-profitable, and least-profitable farms. The man-labor cost includes an arbitrary wage of \$50 per month for the operator and members of the family, besides actual wages for hired labor. Thus, on a dollar basis, man-labor costs per tilled acre were approximately identical on the most-profitable and least-profitable farms.

Power and machinery costs.-The horse and tractor power and machinery cost per tilled acre amounted to \$1.25, \$1.38, and \$1.30 on the average, most-profitable, and least-profitable farms. The cost per tilled acre was approximately the same on the most-profitable and least-profitable farms.

Return from livestock.- The average return per \$100 worth of feed fed to productive livestock (all livestock except horses) for the 18 farms was \$163 when the value of livestock products consumed in the farm home is included. The average returns amounted to \$147 and \$155 for the most-profitable and least-profitable groups, respectively. These figures represent the amount received before any costs were figured for labor to take care of livestock, expenses for shelter, fences, stock water, veterinary bills, stock medicines, and interest on investment. They indicate the amount received from the sale and home use of livestock and livestock products per \$100 worth of feed fed, after deducting livestock purchases and breeding fees and after making adjustments due to changes in inventory valuations. These returns were calculated by dividing the total returns by the total amount of feed fed on the various groups of farms.

Nine farmers in this project kept feed records in order to determine the returns per \$100 worth of feed fed to each major class of productive livestock. From these figures they are able to estimate roughly which kinds of livestock were the most profitable. Their records have been summarized for comparison.

As indicated in table 4 the returns per \$100 worth of feed fed to cattle, hogs, and poultry were \$161, \$120, and \$169, respectively.^{1/} A portion of the margin above feed costs is required to offset other expenses besides feed. It

^{1/} Prices of hogs in relation to feed were at the low point in the cycle during 1940--much lower than they have been for several years. Hog prices were also relatively lower than prices of other livestock and livestock products as compared with normal.

has been estimated that many farmers who have their buildings and fences already constructed and who desire an average wage of 25 cents per hour for caring for livestock need a margin of about \$35 on hogs and about \$50 on cattle (primarily milk cows) and poultry per \$100 worth of feed fed. On this basis the returns from hogs were unfavorable and the returns from cattle and poultry favorable: It is an individual farmer's problem as to the rate of wage to charge any livestock enterprise. Sometimes a higher wage than 25 cents per hour must be charged to a given livestock enterprise because of the income that could be received if that labor were using doing something else. At other times there may be nothing else to do on a given farm that will bring greater returns than 15 cents per hour. In such cases a low rate of return per hour of labor may be considered as better than nothing. Considerable difference in income from each kind of livestock existed on different farms.

Prices.-The average price received for wheat and corn, the two major crops, was 77 cents and 59 cents per bushel. These prices pertained to all wheat and corn sold during the year for the whole farm business. All landlords' crops that were produced during the year were considered as sold during the year either at market price when sold or at the market price if on hand at the end of the year. As indicated in table 3 the most-profitable group of farmers received 9 cents more per bushel for wheat and 2 cents more per bushel for corn than did the least-profitable group of farmers.

Summary of comparison of various factors relating to the farm business.-

A summary of those factors which have been considered of special interest to the farmers in this particular farming area is given in table 5. Each cooperator in this project is able by inspection of the table to compare certain phases of his farm business with certain phases of other farm businesses. Explanation of the contents is given in the heading of the table.

Table 4.- Comparison of returns from different kinds of livestock produced on 9 farms in Phillips, Washington, and Yuma Counties, northeastern Colorado, 1940.

Items	Cattle ^{1/}	Hogs ^{1/}	Poultry ^{1/}
Returns per \$100 feed fed (includes home-used livestock products as returns)	\$161	\$ 120	\$ 169
Total value of feed fed	5,122	2,636	2,237
Average value feed fed per farm	569	439	280
Returns per \$100 invested (includes home-used livestock products)	93	208	299
Total investment	8,860	1,527	1,269
Average investment per farm	984	254	159
Returns per \$100 feed fed (includes home-used livestock products);			
4 most-profitable farms ^{2/}	217	160 ^{3/}	195
4 least-profitable farms ^{2/}	130	91 ^{3/}	122

^{1/}Hogs were produced on 5 farms, poultry on 8 farms, cattle on 9 farms.

^{2/}Classified on basis of returns from each enterprise.

^{3/}Average for hogs is based on the 2 most-profitable and 2 least-profitable farms.

Table 5.- A comparison may be made of figures given in each column relative to the factors at the head of each column for your farm (indicated by red line), for the average of all farms in this study (given between the lines across the middle of the page), for the 6 most-profitable farms (black line), and for different farms which were high or low (for each factor), Phillips, Yuma, and Washington Counties, northeastern Colorado, 1940.

	Rate earned on investment	Bushels yield per acre ^{1/}			Size of farm (acres)	Percentage land tilled	Percentage of tilled land ^{2/} in			Returns per \$100 feed fed to P.L. ^{3/4/}	Value of feed fed P.L. ^{3/}	Cost per tilled acre	
		Wheat	Corn	Barley			Wheat	Corn	Fallow			Man power	Power and machinery
High	17.86	15	27	18.7	1,600	98	43	53	55	\$223	\$2,283	\$2.89	\$1.90
	16	14	24	17	1,400	96	41	50	52	217	1,993	2.71	1.85
	15	13	23	15	1,300	94	39	44	48	208	1,843	2.46	1.75
	14	12	22	13	1,200	92	37	38	44	189	1,693	2.21	1.65
	12	11	21	11	1,100	90	35	32	40	190	1,543	1.96	1.55
	10	10	20	9	1,000	88	33	26	36	181	1,393	1.71	1.45
	8	9	19	7	900	86	31	20	32	172	1,243	1.46	1.35
Av.	7.14	7.6	17.8	6.3	837	84	29	14	28	163	1,033	1.21	1.25
	6	7	16	5	700	82	27	8	24	154	943	.96	1.15
	4	6	15	3	600	80	25	2	20	145	793	.71	.95
	2	5	14	1	500	78	23	--	16	136	643	.46	.85
	0	4	13	--	400	76	21	--	12	127	493	---	.75
	-2	3	12	--	---	74	19	--	8	118	---	---	.65
	-4	2	11	--	---	72	17	--	4	---	---	---	---
Low	-5.23	0	0	0	320	58	0	0	3	113	466	.31	.59

- 1/ Based on acres planted and left for harvest (that is, not planted to another crop or fallowed in case of failure).
- 2/ Tilled land includes all land used for crops requiring seedbed preparation, tilled pasture, and summer-fallow; excludes wild hay.
- 3/ Productive livestock; all livestock except horses.
- 4/ Includes value of livestock products used in the home.

Landlords' earnings on leased lands

The average rate earned by owners of leased private lands was 4.58 percent on a total investment of \$20.13 per farm acre (see table 6). Land constituted \$18.76 of the total investment and improvements \$1.37 per farm acre. The investment represented the operators' estimates of the value of land and improvements, excluding the farm residences. The rate earned varied from a loss of 1 percent to a gain of 11.05 percent. On the one-third of the farms where landlords received the lowest return, the rate earned was 0.61 percent. The landlord's average investment on these farms amounted to \$9,793. The average rate earned on the high-return farms was 8.05 percent and the average investment was \$14,504.

The landlords' sources of income were sales of cash crops, government benefit payments, and cash rent. Stocks of grain on hand at the end of the year were considered as sold at the market price at the end of the year. Thus it is possible that some landlords who stored grain could have obtained a higher or lower price for their crops, depending upon their ability as speculators. The landlords' expenses consisted of taxes and depreciation on farm buildings. Depreciation on the farm residence was not included as an expense.

Table 6.- Rate of interest earned by landlords of leased private lands on 15 farms located on first-grade dry-farming land in Phillips, Washington, and Yuma Counties, northeastern Colorado, 1940. ^{1/}

Classification (basis rate earned)	No. farms	Range in rates earned on total investment	Average rate earned on total investment	Average total investment (land & improvements) per acre	Average investment farm land only per acre	Total average acreage per farm	Total average investment per farm
		Pct.	Pct.			acres	
Low	5	-1.00 to .97	.61	\$17.03	\$16.13	575	9,793
Medium	5	2.35 to 4.75	3.55	19.76	17.83	567	11,196
High	5	6.57 to 11.05	8.05	23.39	22.10	611	14,504
Average			4.58	20.13	18.76	584	11,831

^{1/} Seventeen of the 18 farmers included in this study leased all or a part of the land which they operated. Figures given in this table pertain only to private lands leased. The figures have been calculated on a weighted average basis.

A few factors that affect yields of crops

Farm income depends to a considerable degree upon yields of crops. Any information relating to factors affecting crop yields has been considered useful to individual farmers in the organization and operation of their farm businesses.

Among those things affecting crop yields are the amount of precipitation during the growing season, hail, distribution of precipitation during the growing season, amount and distribution of precipitation during the preceding year, especially for crops produced on summer-fallow land, amount and distribution of precipitation during the season of the year when the crop is planted, the seedbed preparation, and the type of soil. This information has been provided by several farmers cooperating in this study. The data are assembled in table form for the wheat, corn, and barley crops in tables 7, 8, and 9. Obviously, there are other important factors influencing yields to varying degrees. Each farmer who cooperated in this study may wish to indicate on his copy of this report his own interpretation of other reasons for high or low yields so that a historical record may be kept for his individual farm.

It is quite apparent that the amount of precipitation during the period January 1 to July 1 of the crop year is not necessarily a major reason for differences in yields of wheat on different farms (see table 7). Even if we consider only the yields of summer-fallow winter wheat on a given type of soil and eliminate the difference in yield due to hail, we find considerable difference in yields which was apparently not due to difference in the amount of rainfall. It may be observed that the difference in the amount of precipitation was not great. Consequently, other factors such as the distribution of rainfall, the kind and quality of tillage practices performed, the timeliness of performance of tillage, or a combination of factors would have an opportunity to become relatively more important in affecting yields than the differences in the amount of precipitation.

The amount and distribution of precipitation and the corresponding yields of corn on three farms are given in table 8. The only adequate comparison which can be made is between the two farms on which the type of soil is similar, namely, farm No. 1 and farm No. 3. The major type of soil on these farms is very fine sandy loam. Yields of corn were 23.4 and 9.4 bushels per acre. The greater amount of rainfall that fell on farm No. 1 during 2 critical months of the growing season, June and especially July, was undoubtedly one major reason for the difference in yields.

The low yield of corn on farm No.2 of two tenths of a bushel per acre was low as compared to the yield of 9.4 bushels on farm No. 3. The amount and distribution of precipitation was practically identical. One major difference was the type of soil. The highest yield was obtained on the very fine sandy loam soil. There is an insufficient number of cases here to reach a conclusion relative to a comparison of yields on "hard" and "sand" land. However, this observation of the comparison of corn yields on hard and sand land is in agreement with farmers' experience in the area. A better illustration of this situation is given in the 1938 farm business report for northeastern Colorado.

Yields of barley were quite low on all farms where rainfall records were kept (see table 9) except one. On this farm rainfall during the month of June was about 2 inches greater than rainfall on the other farms.

Farm family income from the farm business

Data pertaining to farm family income are given in table 10. The family income for the year 1940 amounted to an average of \$1,379, provided earnings of 5 percent on investment are excluded. This figure consists of (1) the labor and management wage of the farm operator (excluding any consideration of landlord's earnings), (2) the value of farm products used in the home, (3) the earnings of other members of the family besides the operator, and (4) the imputed value of leased farm residences. The monthly per capita income amounted to \$30. The average monthly per capita income for 12 families who lived in their own homes was \$26 as compared with \$37 for those farm families who leased their homes from landlords.

However, if the earnings from the operator's investment are included the per capita income for the farm family was \$45, \$45, and \$43 for all farms, home-owner farms, and tenant farms. Although home-owners received less income from the performance of labor on the farm than did tenants, they received sufficiently greater income from earnings on a much larger investment, \$17,696 compared to \$5,935, so the average monthly per capita income from both labor and capital on both groups of farms was approximately identical. Tenants had an average

Table 7.-Precipitation to harvest time, corresponding yields of wheat, and other related data, pertaining to 7 farms in northeastern Colorado, 1940, (only for those farms where rainfall records were kept).

Farm No.	Precipitation Jan. 1 to July 1	Actual yield of wheat per acre	Estimated yield if had no hail	Distribution of precipitation, 1940				Precipitation preceding year, 1939				Acres of wheat	Percentage of wheat land in ^{1/}			Type of soil
				Jan. 1 to Mar. 31	Apr.	May	June	Jan. 1 to July 31	Aug.	Sept.	Oct.		S.F.	N.F.	Spg. wht.	
1	7.9	11.3	11.3	2.2	1.0	.9	3.8	10.8	1.3	.1	.8	337	100	0	0	Sand
2	7.3	0 ^{2/}	--	1.4	1.0	1.2	3.7	10.2	1.5	1.0	.6	616	100	0	0	Sand
3	6.7	6.5	16.0	2.3	.8	1.7	1.9	9.7	.5	.2	.4	190	100	0	0	Hard
4	6.4	10.2 ^{3/}	11.6	2.2	.9	1.5	1.8	11.2	.4	.1	.8	193	58	42	0	Sand
5	6.3	4.8 ^{4/}	4.8	2.1	1.0	1.2	2.0	7.1	.3	.1	.4	120	62	25	13	Hard
6	6.1	15.0	16.0	2.3	.8	1.3	1.7	9.2	.7	0	.8	236	100	0	0	Hard
7	5.3	10.5	10.5	1.7	.5	.7	2.4	11.7	1.2	.2	.4	80	100	0	0	Hard
Av.	6.6	--	--	2.0	.9	1.2	2.5	10	.8	.2	.6	253	93	6	1	

^{1/} S.F. means summerfallow wheat; N.F. means nonfallow wheat; spg. is spring wheat.

^{2/} The wheat was completely hailed out.

^{3/} Actual yields of summerfallow and nonfallow wheat were 15.1 and 3.6 bushels per acre, respectively.

^{4/} Actual yields of summerfallow, nonfallow, and spring wheat were 7.5, 0.2, and 0.5 bushels per acre.

Table 8.- Precipitation to harvest time and corresponding yields of corn on 3 farms in northeastern Colorado, 1940, (only those farms where rainfall records were kept).

Farm No.	Precipitation Jan. 1 to Sept. 30	Yield of corn per acre	Distribution of precipitation							Acres of corn	Major type of soil <u>1/</u>
			Jan. 1 to Mar. 31	Apr.	May	June	July	Aug.	Sept.		
	in.	bu.	in.	in.	in.	in.	in.	in.	in.		
1	13.1	23.4	2.2	1.0	.9	3.8	3.2	.8	1.2	460	Sand
2	10.0	.2	2.1	1.0	1.2	2.0	1.0	1.3	1.4	19	Hard
3	9.8	9.4	2.3	.9	1.5	1.8	.9	.8	1.6	101	Sand

1/ "Sand" is the popular name for very fine sandy loam soils and "hard" is the name for silt loam soils.

Table 9.- Precipitation to harvest time and corresponding yields of barley on 6 farms in northeastern Colorado, 1940, (on those farms where rainfall records were kept).

Farm No.	Precipitation Jan. 1 to July 1	Yield of barley per acre	Distribution of precipitation				Acres of barley	Type of soil <u>2/</u>
			Jan. 1 to Mar. 31 <u>1/</u>	Apr.	May	June <u>3/</u>		
	in.	bu.	in.	in.	in.	in.		
1	7.9	17.5	2.2	1.0	.9	3.8	30	Sand
2	6.7	4.0	2.3	.8	1.7	1.9	20	Hard
3	6.4	2.0	2.2	.9	1.5	1.8	70	Sand
4	6.3	4.0	2.1	1.0	1.2	2.0	82	Hard
5	6.1	4.5	2.3	.8	1.3	1.7	33	Hard
6	5.4	5.0	1.7	.6	.7	2.4	68	Hard

1/ Estimated from data published for nearby towns by the U. S. Weather Bureau.

2/ "Sand"; very fine sandy loam soils. "Hard"; silt loam soils.

3/ Any rain that fell after June was considered ineffective in influencing yields of barley.

Table 10.-Per capita income received by actual farm operators and their families as a result of the operation of their farm businesses, and related items as indicated, Phillips, Washington, and Yuma Counties, northeastern Colorado, 1940.*

Item	Average on 18 farms	Average on 12 farms where operators own their homes	Average on 6 farms where operators lease their homes
Labor and management wage of farm operator	\$1,106	\$ 953	\$1,413
Value of farm products used in home	199	163	272
Value of family labor (other than operator)	32	17	62
Imputed value of leased residences	42	<u>1/</u>	<u>125 2/</u>
Total family income (excluding 5% interest on farm investment)	1,379	1,133	1,872
Average number in family on farm	3.8	3.7	4.2
Annual per capita family income (excluding 5% interest)	\$ 363	\$ 306	\$ 446
Monthly per capita family income (excluding interest)	30	26	37
Total family income including interest earned on investment	2,068	2,018	2,169
Operator's total investment in farm business	13,776	17,696	5,935
Annual per capita income (including earnings from farm investment)	544	545	516
Monthly per capita income (including earnings from farm investment)	45	45	43

*The income includes government benefit payments and income from labor off farm which is related to the farm business. It does not include outside income which is not related to the farm business. It considers the operator's share only.

- 1/Rental value excluded because expenses of farm residences are separated from farm business expenses.
- 2/Imputed rental value included on assumption that the residence is furnished by landlord. (Basis 12 percent of inventory value.)

of 4.2 persons in the farm family and home-owners 3.7 persons.

Farm home facilities

Farm management studies are made primarily for the purpose of helping farmers discover ways of making more money on their individual farms. It is expected that a man who is improving his financial situation is in a better position to enjoy a more abundant life. However, under our present capitalistic system and during peace times people are free (within limits) to choose the way the money shall be spent. Some people desire adequate security during old age and therefore invest in land or securities in place of buying home facilities or luxuries. Others prefer to buy now and let the future take care of itself. Some are able to buy desirable home facilities and still provide security, yet do not choose to buy those facilities. Thus an inventory of home facilities is not necessarily an adequate measure of the economic welfare of farmers. However, such an inventory does show what facilities exist on farms and calls attention to the fact that if such things as well-painted farm homes, electric lights, mechanical refrigerators, and bathrooms are desired, there are still opportunities for employment of men to produce those products. If farmers, operating uneconomic farm units, were encouraged by government assistance to leave the farm and produce those goods which farmers do not now have, more goods would be produced and the displaced farmer as well as the farmers remaining on the land would be able to enjoy more income. This would tend to relieve the economic problem on the farm.

In table 11 is given an inventory of farm home facilities on the 18 farms in the study, on 12 farms where the farm residences were owned by the farm operators and on 6 farms where the farm residences were leased from landlords. About one-half the homes had a good surface coating of paint and the remainder had fair or no paint. About one-half the homes had running water and bathrooms. About 40 percent of the homes contained mechanical refrigerator units, either electric or oil burner type. About two-thirds had electric lights. About 90 percent had telephones and 94 percent had radios. Opportunities for improvement include the provision for mechanical refrigerators, running water, bathrooms, and well-painted farm homes.

The farm operators who owned their homes had about the same home conveniences as did the tenants. According to figures given in table 11 a higher percentage of home owners than tenants had running water and bathrooms. However, a higher percentage of tenants had mechanical refrigerators, telephones, radios, and well-painted farm homes. Each group had similar electric lighting facilities. These statements merely indicate that it is possible for tenants and homeowners to have similar farm home facilities.

Table 11.-Condition of paint on farm residences and farm home facilities on 18 farms in northeastern Colorado, December 1940.

Item	Average of 18 farms	Average on 12 farms where operators <u>owned</u> the farm residence	Average on 6 farms where operators <u>leased</u> the farm residence
Number of farmers in farm account study	18	12	6
Condition of paint on farm residence:			
Percentage having good paint	56	58	50
" " fair "	28	17	50
" " no "	16	25	--
Number of rooms in farm home	7	7	6
Percentage of farm homes having indicated facilities:			
Bathroom	50	58	33
Water facilities:			
Running water	55	59	50
Pitcher pump	28	33	17
No water piped to house	17	8	33
Lighting facilities:			
Electric lights			
Power line	44	42	50
Combustion engine	22	25	17
Wind propeller	6	8	--
Gas or kerosene burner	28	25	33
Telephone	89	83	100
Radio	94	92	100
Refrigeration:			
Electric	28	25	33
Oil burner	11	8	17
Icebox	22	25	17
Nothing except cave, basement, etc.	39	42	33
Kind of heat for winter			
Furnace	39	42	33
Circulating heater	56	50	67
Ordinary stove	5	8	--

Summary

Eighteen farmers operating farms valued at an average of \$24,000 and located on first-grade dry-farming land in north-eastern Colorado received a net average cash income of \$1,952 during the year 1940. After including the net inventory increases of \$350 the total net farm gain amounted to \$2,302. This was slightly less than in 1939 but greater than in 1938 and 1937.

The net farm gain for the most-profitable one-third of the farms, which were valued at an average of \$30,000, amounted to \$4,329. On the least-profitable one-third of the farms, which were valued at an average of \$14,000, the net gain was \$547.

The average size of farm was 837 acres. The most-profitable one-third averaged 909 acres, and the least-profitable one-third 592 acres.

The average yields of the two major crops, wheat and corn, were 7.6 and 17.8 bushels per acre. Operators of the most-profitable group of farms harvested an average of 283 acres of wheat yielding 11.3 bushels per acre, while operators of the least-profitable group harvested an average of 75 acres yielding 7.6 bushels. On the high-income farms an average of 190 acres of corn yielding 22.6 bushels per acre were harvested, compared to an average of 35 acres yielding 4.8 bushels on the low-income farms.

The returns per \$100 worth of feed fed to productive livestock amounted to \$163, being practically identical on the high- and low-income farms. The returns per \$100 worth of feed fed cattle, hogs, and poultry amounted to \$161, \$120, and \$169, respectively, on a small sample of farms. Returns from cattle (primarily milk cows) and poultry were much more favorable than the returns from hogs.

Landlords received an average of 4.6 percent interest on an average investment of approximately \$12,000 per farm.

The estimated farm family income obtained from the farm amounted to \$45 per person per month during 1940. Farm families living in leased residences received about the same monthly per capita income as home owners. Home owners and tenants had similar home facilities.