



**Costs and Returns on
Dry-Land Wheat Farms**
(Wasco County, Oregon, 1952)

D. Curtis Mumford

Agricultural Experiment Station
Oregon State College
Corvallis

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D. CURTIS MUMFORD
Agricultural Economist

This circular reports a study made of costs and returns for the year 1952 on 18 dry-land wheat farms in Wasco County, Oregon. It is essentially a revision of Station Circular of Information 529, bringing it up to date by substituting 1952 for 1951 information. These farms all followed the wheat-fallow system of farming - the system that has been almost universally practiced in the low-rainfall portions of the Columbia River Basin.

The Farms Studied

Tenure. Of the 18 operators, 4 were full owners, averaging 1,306 acres per owner; 4 both owned and rented, the combination averaging 3,098 acres each; 10 were tenants, operating units averaging 1,312 acres each.

Capital. Total capital averaged \$116,990 per farm. About 80 per cent of total, \$93,532, was estimated for land and buildings. Present (depreciated) value of machinery was \$16,503. Livestock inventory value at end of year averaged \$6,955 per farm. (See Table 1)

Land Use. The 18 farms averaged 1,708 acres per farm, of which 910 was crop land and 798 range. The crop land was about evenly divided between crop and fallow. Wheat (mostly winter wheat) comprised 440 acres or 86 per cent of all crop acres. (See Tables 1 and 2)

Livestock. Livestock inventories showed an average of 32 animal units (cow equivalents) per farm; 15 farms had beef (range of 8 to 83 head) with average of 27 cows per farm and 36 acres range pasture per cow; 7 farms sold hogs, with an average of 33 per farm.

*This report, although based on only 18 farm records, provides timely and useful data on dry-land wheat farms in the Columbia Basin. The averages shown here may not represent the averages for the farms in the entire region.

This study was made possible by the cooperation of the growers and the Extension Service in Wasco County. Major credit should go to the late Dr. G. W. Kuhlman of the Department of Agricultural Economics for initiating and carrying through this study for 1951. The author is also particularly grateful to E. M. Nelson, County Extension Agent in Wasco County, for his help in this project; to H. Prentiss Gazaway, former graduate student, who procured the field data; and to William B. Back, Assistant Agricultural Economist at Oregon State College, for statistical interpretation of the data.

Cost of Farming

Total costs averaged \$24,408 per farm on the 18 farms or \$26.84 per cropland acre (Table 4). Total costs included all cash expenses, depreciation charges on equipment, interest charges on the capital investment, and a labor charge for the operator's work as determined from the going wage for such services in the community.

Direct costs (out-of-pocket) averaged \$11,743 per farm, were 48 per cent of all costs, and totaled about \$13 per cropland acre. Hired labor, fertilizer and weed control, and repairs were the largest items, comprising one-half of these costs. Other items were insurance, property taxes, and supplies of various kinds.

Interest when calculated at 5 per cent of total capital investment, averaged \$5,849 per farm or \$6.43 per cropland acre.

Operator's labor for the year was calculated at an average of \$3,614 per farm. All operators considered themselves year round workers. Thus the wage value of their work, based on their own estimates, averaged \$301 per month in addition to the farm-furnished living they obtained. Wages for hired labor (largely seasonal) averaged \$265 per month, plus perquisites, such as room or housing and farm products.

Machinery costs averaged \$6,012 per farm or \$6.61 per cropland acre (Table 5). The present (depreciated) inventory value of the general machinery averaged \$7,995 per farm. Inventory of motor vehicles averaged another \$8,508 per farm (Table 1). The total investment in these two items, general machinery and motor vehicles, amounted to \$18.15 per cropland acre. The range was from \$9.28 to \$42.42.

Returns from Farming

Total farm receipts (including net increases or decreases in cattle) averaged \$32,966 per farm; \$64.77 per acre in crop or \$36.23 per acre of cropland. The sale of wheat contributed \$31,021 or 94 per cent of all receipts on the farms in the study.

Total miscellaneous receipts (from other than wheat) averaged only \$1,945 per farm.

Net returns from the farm business may be expressed in various ways in order to show how much of the gross income--after deducting costs of all other items--remains to the operator for using his capital and his labor in conjunction with management and risk-taking. Four measures of income show the following:

1. FARM INCOME (Total receipts minus all expense items except wage for the operator and interest on capital).

Total Receipts (Table 6)	\$32,966
Direct costs including depreciation (Table 4)	<u>14,945</u>
Farm Income	\$18,021

2. OPERATOR'S LABOR INCOME (Farm income minus interest on total capital).

Farm Income	\$18,021
Interest charged on capital (\$116,990 @ 5%)	<u>5,849</u>
Operator's Labor Income	\$12,172

3. RETURN ON CAPITAL (Farm income minus wage for the operator).

Farm Income	\$18,021
Wage for operator (yearly basis)	<u>3,614</u>
Return on Capital	\$14,407
Per cent return on capital (\$116,990)	12.3%

4. NET PROFIT (Total receipts minus total costs equal the return to management and risk-taking).

Total receipts (Table 6)	\$32,966
Total costs (Table 4)	<u>24,408</u>
Net Profit	\$ 8,558

In computing the foregoing various measures of earnings, the entire farm business for all of the 18 farms studied was regarded as owner-operated.

Returns analyzed on landlord-tenant basis:

Inasmuch as tenancy was so prevalent, the data have also been arranged to show the approximate distribution or sharing of the business that occurs under the usual landlord-tenant agreement (Table 7).

Most leases provided that the landlord receive one-third of the wheat crop as his rental. Terms for other crops varied from this in some cases. Arrangements for livestock varied considerably from farm to farm.

According to the prevailing lease arrangements, in 1952, the landlord's average net return on his investment was \$8,205, or 8.5 per cent on \$97,010. The tenant's net return for his labor and management was \$8,818, or slightly more money than the landlord earned on his investment.

Cost of Producing Wheat

The cost of producing wheat (main crop) in 1952 on the farms studied may be approximated as follows:

Total farm costs (from Table 4)	\$24,408
Deduct miscellaneous receipts (from Table 6)	<u>1,945</u>
Difference or net cost of marketable wheat	\$22,463
Average cost per bushel	\$1.61

This rough method of calculating cost of the main product is employed on the assumption that miscellaneous receipts equal their cost of production. The balance remaining after deducting that amount from total farm costs therefore represents the cost of producing the marketable wheat.

The cost of producing wheat averaged \$1.20 per bushel for the five low-cost farms and \$2.32 per bushel for the five high-cost farms. Such a large difference in costs suggests the need for the following discussion of factors affecting costs and returns.

Analysis of Farm Income

Farm income varied widely on the 18 farms in this study (Table 8). Statistical analysis indicated that 91 per cent of the variation in farm income was explained by variations in the number of acres in wheat, the yield of wheat, and the size of the livestock enterprise.

Farm income increased, on the average, about \$32 for each acre increase in wheat. Cropland ranged from 450 acres to 2,395 acres (Table 9).

Farm income increased, on the average, about \$914 for each bushel increase in wheat yield per acre (Table 10). Wheat yields ranged from 23.0 to 45 bushels per acre on these farms. With wheat produced on an average of 440 acres per farm, each bushel increase in yield meant an increase in income to the operator for his services and the use of the capital of \$2.08 per acre.

Farm income was higher for the group of 9 farms with the most livestock (Table 11). This was true not because of the livestock but because of the fact that the farms with the most livestock also had the most cropland and therefore the largest acreage of wheat. It was the wheat that paid off in 1952--not the livestock. In fact, when the influence of the acreage in wheat was removed, statistically, it turned out that for every increase in the number of animal units (cow equivalents) per farm, there was a decrease of about \$60 in net farm income per farm. Livestock numbers varied from one to 128 animal units per farm. This poor showing for livestock in 1952 was caused by the drastic decline in the price of beef cattle that year, in which the market price of breeding cows as well as other beef animals took a very unusual drop. The year before (1951) the results of a similar study in this same area showed a net gain of \$66 in farm income per farm for every increase of one animal unit per farm. The price of beef cattle in 1951 was reasonably stable and therefore 1951 was more normal than 1952 in this respect. However, in 1951 beef cattle prices were high. Therefore the \$66 per animal unit is higher than can be expected over a long period of years.

The farms with the highest receipts per cropland acre also were, in general, average or above average in yield of wheat, acres in wheat, animal units per farm, and total farm income. (Table 12)

The cost of farming per cropland acre, as shown also by other studies, varied only slightly in the different groupings shown (see Tables 9-12). This seems to indicate that the farms in the area covered by this study were large enough and the methods of farming so standardized that costs per cropland acre are quite uniform.

Receipts per cropland acre varied considerably from farm to farm with variations in crop yields. While the quality of cropland and the climatic conditions encountered were major factors influencing production, the management was no small item in matters such as timely performance of crop operations, ability to utilize forage and range resources, and advantageous marketing of farm products.

Costs and Returns - 18 Dry-Land Wheat Farms
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Table 1. Capital Investment per Farm

Item	Average capital per farm	Proportion of capital <u>Per cent</u>
Cropland, 910 acres (approximately \$77 per acre)	\$ 70,420	60
Range land, 798 acres (approximately \$9 per acre)	6,920	6
Total land, 1,708 acres per farm	\$ 77,340	66
Buildings	16,192	14
Total land and buildings	\$ 93,532	80
General machinery	7,995	7
Tractors, trucks, farm share of automobile	8,508	7
Livestock	6,955	6
Total capital	\$116,990	100

Table 2. Use of Cropland

Item	Number of farms	Average per farm reporting <u>Acres</u>	Average for all 18 farms <u>Acres</u>	Proportion of total cropland on all farms <u>Per cent</u>
Wheat	18	440	440	48.4
Barley	2	18	2	.2
Alfalfa hay	7	37	15	1.6
Grain hay	11	20	12	1.3
Pasture	6	118	40	4.4
New seeding of grass or alfalfa	--	--	--	--
Total land in crops	18	--	509	55.9
Summer fallow	18	--	401	44.1
Total Cropland per Farm	18	--	910	100.0

Table 3. Grain and Hay Crops Harvested

Crop	Average production per farm	Yield per acre
Wheat, bushels	14,610	33.2
Barley, bushels	71	35.6
Alfalfa hay, tons	16	1.1
Grain hay, tons	17	1.4

Table 4. Average Costs of Farming

Item	Cost per farm	Cost per cropland acre	Percentage of cost
			<u>Per cent</u>
Direct Costs			
Hired labor, 8.6 months @ \$265 per month	\$ 2,264	\$ 2.49	9.3
Custom work	135	.15	.6
Gas and oil	998	1.10	4.1
Repair	1,714	1.88	7.0
Supplies	777	.85	3.2
Fertilizer; weed control	2,081	2.29	8.5
Seed and seed treatment	216	.24	.9
Livestock expense	718	.79	2.9
Crop and fire insurance	861	.95	3.5
Property taxes	1,184	1.30	4.8
Miscellaneous	795	.87	3.3
Total direct costs	\$11,743	\$12.91	48.1
Value of Operator's labor, 12 mos. @ \$301 per month ..	3,614	3.98	14.8
Depreciation on bldgs., mach., and equipment	3,202	3.52	13.1
Interest on Capital, \$116,990 @ 5%	5,849	6.43	24.0
Total costs	\$24,408	\$26.84	100.0

Table 5. Distribution of Machinery Costs

Item	Average cost per farm	Cost per cropland acre	Proportion of machine costs
Depreciation (15% on \$16,503)	\$ 2,475	\$2.72	41
Repair	1,714	1.88	28
Motor fuel and oil	998	1.10	17
Interest (5% on inventory value)	825	.91	14
Total machinery cost	\$ 6,012	\$6.61	100

Table 6. Average Receipts

Item	Average receipts per farm	Proportion of total receipts
Wheat, 13,918 bushels sold @ \$2.23 per bushel	\$31,021	<u>Per cent</u> 94.1
<u>Miscellaneous receipts</u>		
Crop sales other than wheat	133	.4
Livestock net increase	1,190	3.6
(Cattle sales \$1,903, hog sales \$568, misc. sales, \$98, livestock net decrease \$1,379)		
Machine hire	191	.6
Off-farm work	197	.6
Practice payments	175	.5
Other	59	.2
Total miscellaneous receipts	\$ 1,945	5.9
Total farm receipts	\$32,966	100.0

Table 7. Approximate Average Farm Costs and Returns for Landlord and Tenant, Based on the Usual Lease Terms

Item	Landlord's share	Tenant's share
<u>Returns</u>		
Wheat (Landlord gets 1/3 of crop or 4,870 bushels)	\$10,860	\$20,161
Other crops	44	89
Cattle and swine*	546	546
Other receipts	--	720
Total Returns	\$11,450	\$21,516
<u>Costs</u>		
Property taxes	\$ 888	\$ 296
Depreciation on buildings and machinery	724	2,478
Repair buildings, fences, and machinery	324	1,390
Fertilizers and weed spray	520	1,561
Crop and fire insurance	430	430
Livestock expense	359	359
Hired labor	--	2,264
Gas and oil	--	998
Seed and supplies	--	993
Miscellaneous	--	930
Total Costs	\$ 3,245	\$11,699
Net returns to landlord's capital, and tenant's labor and capital/	\$ 8,205	\$ 9,817

* Assumed as a 50-50 share basis.

/ The respective net returns were \$8,205 or 8.5 per cent on the landlord's capital of \$97,010 and \$9,817 as a return for the tenant's labor, management, and his capital of \$19,980.

Table 8. Effect of Cropland Acreage, Wheat Yields, Net Livestock Increase, and Receipts per Cropland Acre Upon Farm Income

Farm income group	Average farm income*	Cropland per farm	Wheat yield per acre	Net livestock increase per farm	Cost per cropland acre	Receipts per cropland acre
		<u>Acres</u>	<u>Bushels</u>			
9 lowest farms	\$ 9,001	663	27	\$1,124	\$26.52	\$28.42
9 highest farms	27,043	1,155	36	1,256	27.03	40.75
All farms	\$18,021	910	33	\$1,190	\$26.84	\$36.25

* Net return to the operator for his services and the use of the farm capital.

Table 9. Relation of Size of Farm in Terms of Cropland Acreage to Farm Costs, Receipts, and Net Farm Income

Cropland acreage	Cropland per farm	Total returns		Cost per cropland acre	Receipts per cropland acre	Wheat yield per acre
		Farm receipts	Farm income*			
	<u>Acres</u>					<u>Bushels</u>
9 lowest farms	621	\$19,564	\$ 9,809	\$28.28	\$31.52	29
9 highest farms	1,198	46,369	26,234	26.10	38.70	35
All farms	910	\$32,966	\$18,021	\$26.84	\$36.25	33

* Net return to the operator for his services and use of the farm capital.

Table 10. Relation of Yield of Wheat per acre to Cost per Bushel and to Cost per Acre and Farm Income

Wheat yield group	Wheat yield per acre	Farm income*	Cost per bushel wheat	Cost per cropland acre	Cropland per farm
	<u>Bushels</u>				<u>Acres</u>
9 lowest farms	28	\$10,625	\$1.94	\$24.78	738
9 highest farms	36	25,419	1.47	28.25	1,081
All farms	33	\$18,021	\$1.61	\$26.84	910

* Net return to the operator for his services and the use of the farm capital.

Table 11. Relation of Livestock Enterprise to Income, Cost, and Acreage

Animal unit group	Animal units*	Net livestock increase	Farm income [†]	Cost per cropland acre	Acres per farm		
					Crop-land	Range land	Total farm
9 lowest farms	14	\$ 705	\$14,091	\$27.63	734	403	1,138
9 highest farms	51	1,675	21,953	26.31	1,084	1,193	2,278
All farms	32	\$1,190	\$18,021	\$26.84	910	798	1,708

* Cow equivalents.

[†] Net return to the operator for his services and use of the farm capital.

Table 12. Relation of Receipts per Cropland Acre to Cost and Other Factors

Farm receipts per cropland acre group	Receipts per cropland acre	Cost per cropland acre	Farm income*	Net livestock increase	Wheat yield per acre	Wheat acreage	Cropland Acreage
					<u>Bushels</u>	<u>Acres</u>	<u>Acres</u>
9 lowest farms	\$29.41	\$25.04	\$12,986	\$1,249	28	422	923
9 highest farms	43.31	28.70	23,058	1,131	38	458	896
All farms	\$36.25	\$26.84	\$18,021	\$1,190	33	440	910

* Net return to the operator for his services and use of the farm capital.