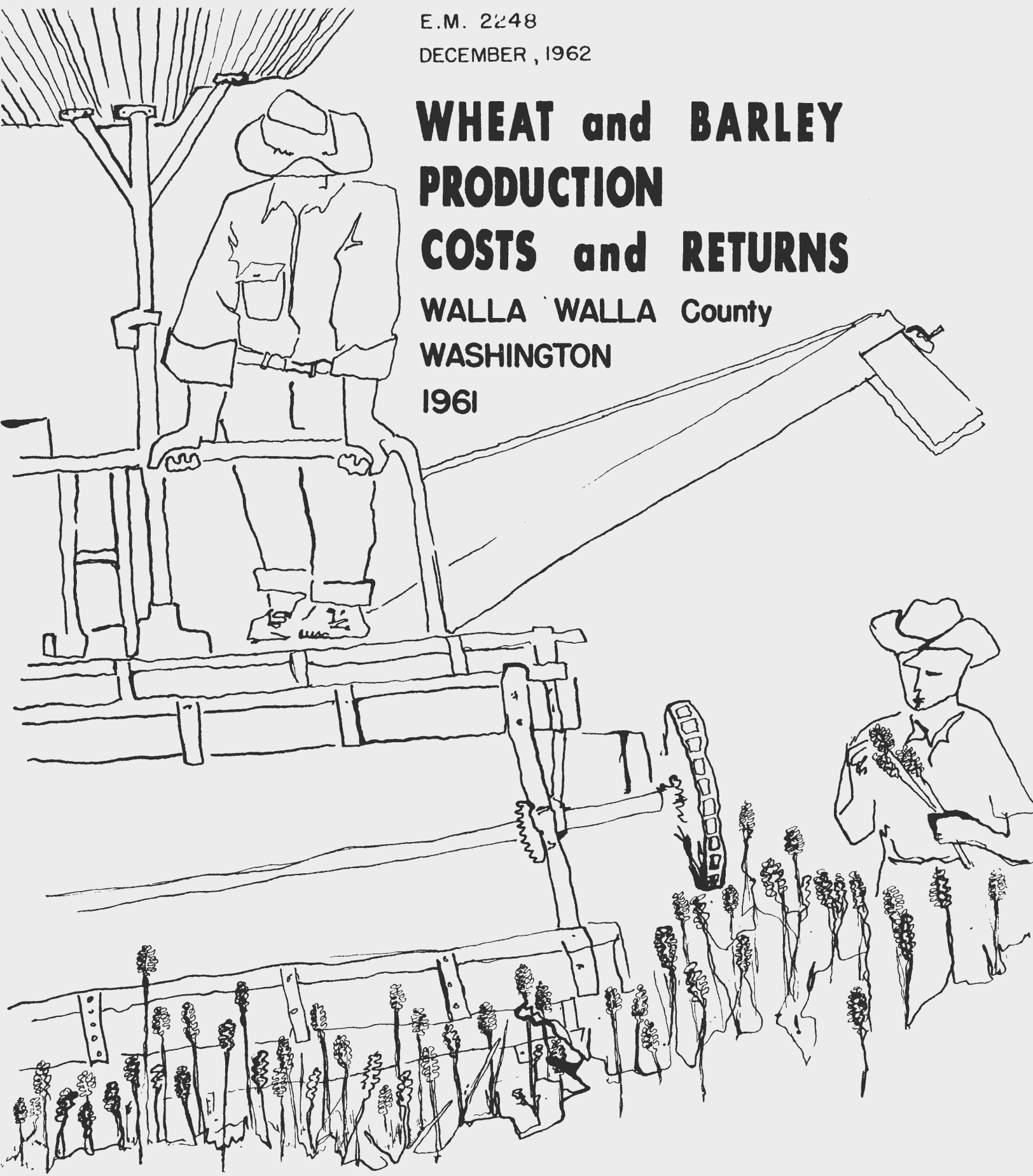


E.M. 2248  
DECEMBER, 1962

# WHEAT and BARLEY PRODUCTION COSTS and RETURNS

WALLA WALLA County  
WASHINGTON  
1961



AGRICULTURAL EXTENSION SERVICE • WASHINGTON STATE UNIVERSITY • PULLMAN

In cooperation with the United States Department of Agriculture

Issued in furtherance of the Acts of May 8 and June 30, 1914, by the Washington State University

Agricultural Extension Service, C. A. Svinth, Director

COSTS AND RETURNS OF PRODUCING WHEAT AND BARLEY  
IN THE PRESCOTT AREA, WALLA WALLA COUNTY, WASHINGTON<sup>1/</sup>

This study, made in the fall of 1961, represents the combined judgment of a group of leading grain farmers of the Prescott, Washington, area. In their opinion cost and return data shown in this study represent an optimum combination of land, labor and machinery for a 1700 acre wheat-barley farm. An owner-operator would combine land, labor and machinery in these proportions with above average management practices to obtain the results shown in this study.<sup>2/</sup>

The purposes of the study:

1. To determine the size of an economical wheat-barley farm in the Prescott, Washington, area.
2. To determine the capital investment, land use, labor requirements, income and expense for the farm size selected.
3. Develop cost and return information which would be a guide and worksheet for an individual wheat-barley farmer to use in developing his own budget. These figures can then be used to analyze his farm business.

A 1700 crop acre wheat-barley farm requires an investment of about \$380,000 of which land accounts for about 89 per cent or \$340,000. Machinery investment accounts for another \$32,000. The full-time labor and management of the operator plus approximately 167 man days of hired labor per year is required to operate this farm.

A net price of \$1.72 per bushel for wheat and \$38 per ton for barley is used to calculate receipts. The operator makes a net return for labor and management of about \$11,660 after deducting \$14,040 interest on the total investment.<sup>3/</sup> In this study, costs (such as hired labor, fuel, insurance, etc.) are allocated between wheat and barley enterprises on the basis of the number of acres of each crop grown. Other costs (such as seed, fertilizer, crop spray, etc.) are allocated on the basis of amounts of materials applied directly to that crop.<sup>4/</sup>

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<sup>1/</sup> Authors - Clifton Perryman, Homer Fletcher, Art Cagle, Bob Williams. In cooperation with the Department of Agricultural Economics.

<sup>2/</sup> Costs and returns shown in this study apply only to the owner-operated wheat-barley farm. A tenant-operator would have less capital investment, less taxes and other items of expense, and income would be different.

<sup>3/</sup> A 3.32 per cent interest charge is used. This is the net return which a landlord would receive as 1/3 share rent for this same farm.

<sup>4/</sup> The allocation of costs between wheat and barley is shown in section F, page 6.

When all costs are allocated between wheat and barley, the net return to labor and management from wheat is approximately \$25.58 per acre of wheat grown. The net return to labor and management from barley is a net loss of \$4.45 per acre of barley grown. When barley is not charged for any overhead costs (such as interest, depreciation, taxes, licenses, etc.), barley returns \$21.28 per acre over cash costs.<sup>1/</sup> Even though barley does not pay all of its share of overhead costs, a farmer is better off to raise barley when he can more than cover his cash costs. This is true unless some other crop can be grown on the land now used for barley which will return a greater profit per acre than barley.

Total cost (not including a charge for owner's labor and management, and interest on investment) for wheat is \$25.27 per acre or \$.63 per bushel. Barley costs amount to \$24.90 per acre or \$24.90 per ton. When a 3.32 per cent interest on land investment and a 7 per cent charge for machinery and operating investment is added to the costs, total cost of producing wheat is \$42.82 per acre or \$1.07 per bushel. Barley costs \$42.45 per acre or \$42.45 per ton.

A landlord receives 3.32 per cent interest on his investment when land is leased for 1/3 crop share rent based on market inventory values. He received 4.11 per cent on his investment when land is leased for 2/5 crop share rent.<sup>2/</sup>

A study of the economics of adding a beef cattle enterprise to this type of grain operation has been prepared for the Prescott Area. This publication is Extension Memo 2247, "Costs and Returns of a Cow-Calf Enterprise," prepared by Cliff Perryman, Homer Fletcher and Douglas Warnock.

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<sup>1/</sup>A return of \$21.28 per acre of barley is obtained when only cash costs are considered. Cash costs are subtracted out of gross barley income. These cost items are items 1 through 6 in section F on page 6.

<sup>2/</sup>The allocation of costs and returns on a share rent basis is shown in table 1, page 9.

ESTIMATED BUDGET FOR 1700 ACRES OF WHEAT-FALLOW  
CROPLAND IN THE PRESCOTT AREA OF WALLA WALLA COUNTY, WASHINGTON

A. CAPITAL INVESTMENT

1700 acres @ \$200 per acre	\$340,000
Buildings	2,000
Machinery	32,350
Operating Capital	<u>6,000</u>
Total Investment	<u>\$380,350</u>

B. LAND USE

Wheat	500 acres
Barley	300 acres
Summerfallow	<u>900 acres</u>
Total	1,700 acres

C. LABOR REQUIREMENTS

Operator Full time - Approximately 167 man-  
days of hired labor

The figures shown throughout this budget were developed as a guide for a given farm size. Every farm has its own environmental conditions, size, amount and kind of machinery, financial position and management ability of the operator, etc. Therefore, costs and returns are unique to that particular farm. An analysis of any individual farm can be made by placing individual farm figures to the right of each guide figure throughout this budget.

D. INVENTORY OF MACHINERY AND EQUIPMENT NECESSARY FOR THE  
PRODUCTION OF WHEAT AND BARLEY ON 1700 ACRES OF CROPLAND  
IN THE PRESCOTT AREA OF WALLA WALLA COUNTY, WASHINGTON

	<u>Market Value</u>	<u>Value to be Depreciated*</u>	<u>Years of Use</u>	<u>Annual Repairs</u>	<u>Annual Depreciation</u>
Machine shed & shop	\$ <u>2,000</u>	\$ <u>2,000</u>	25	\$ <u>50</u>	\$ <u>80</u>
Total Farm Improvement (Used in production)	\$ <u>2,000</u>	\$ <u>2,000</u>		\$ <u>50</u>	\$ <u>80</u>
Fuel Equipment	\$ 350	\$ 350	15	\$ --	\$ 25
Shop Tools & Equipment	1,700	1,700	10	100	--
Trap Wagon	500	500	10	10	50
Tractor	10,000	6,500	5	600	1,300
Combine	10,000	6,000	15	300	400
Disc	800	600	10	100	60
Drills	1,000	1,000	10	75	100
Rod Weeders	1,000	900	10	120	90
Truck	2,000	1,000	10	200	100
Truck	1,000	1,000	5	100	200
Pick-up	1,000	850	5	100	170
Car (50% of Value Farm Use)	1,000	825	5	75	165
Sweep or skew treader	<u>2,000</u>	<u>1,500</u>	10	<u>50</u>	<u>150</u>
Total Farm Machinery and Equipment	<u>\$32,350</u>	<u>\$22,725</u>		<u>\$1,830</u>	<u>\$2,810</u>
Total Improvements and Machinery	<u>\$34,350</u>	<u>\$24,725</u>		<u>\$1,880</u>	<u>\$2,890</u>

\*Depreciation is calculated on market value less salvage value.  
less \$9,625 equals \$24,725 depreciable balance.)

(\$34,350

E. OPERATING BUDGET

Receipts

500 acres wheat, 50 bu. per acre - 20,000 bu. @ \$1.72	\$34,400
300 acres barley, 1 ton per acre - 300 tons @ \$38	<u>11,400</u>

TOTAL RECEIPTS	<u>\$45,800</u>
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Expense

	<u>Total</u>
1. Hired Labor	\$ 2,500
2. Fuel (Gas, Diesel Oil)	2,300
3. Car, Truck & Machinery Repair	1,830
4. Fertilizer	4,000
5. Crop Spray	1,600
6. Seed & Seed Treatment	1,330
7. Build, Repair & Upkeep	50
8. Taxes	2,220
9. Insurance	800
10. Electricity	180
11. Licenses	200
12. Other Farm Expense (phone, office supplies)	<u>200</u>

TOTAL EXPENSES (Does not include depreciation, interest, labor and management)	\$ <u>17,210</u>
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NET CASH INCOME (Gross income - cash expenses)	<u>\$28,590</u>
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13. Depreciation	<u>2,890</u>
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TOTAL EXPENSE (Does not include interest, labor & management)	\$ <u>20,100</u>
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RETURN TO LABOR, MANAGEMENT & INVESTMENT	\$25,700
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14. Interest on land* machinery and operating capital**	14,040
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RETURN TO LABOR AND MANAGEMENT	<u>\$11,660</u>
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\*The interest used is 3.32 per cent. (The net return to a landlord receiving 1/3 crop share rent.)

\*\*Interest on machinery and operating capital is calculated at 7 per cent.

F. ALLOCATION OF COSTS TO WHEAT & BARLEY ENTERPRISES

	<u>Total Farm</u>	<u>Wheat</u>	<u>Barley</u>
1. Hired Labor*	\$ 2,500	\$ 1,562.50	\$ 937.50
2. Fuel*	2,300	1,437.50	862.50
3. Car, Truck & Machinery Repair*	1,830	1,143.75	686.25
4. Fertilizer**	4,000	2,500.00	1,500.00
5. Crop Spray**	1,600	1,000.00	600.00
6. Seed & Seed Treatment**	1,330	900.00	430.00
7. Building Repair & Upkeep*	50	31.25	18.75
8. Taxes*	2,220	1,387.50	832.50
9. Insurance*	800	500.00	300.00
10. Electricity*	180	112.50	67.50
11. Licenses*	200	125.00	75.00
12. Other Farm Expense (phone office supplies)*	<u>200</u>	<u>125.00</u>	<u>75.00</u>
TOTAL OPERATING EXPENSES	\$ <u>17,210</u>	\$ <u>10,825.00</u>	\$ <u>6,385.00</u>
Cash Receipts Less Cash Expense	<u>28,590</u>	<u>23,575.00</u>	<u>5,015.00</u>
13. Less Depreciation	<u>2,890</u>	<u>1,805.00</u>	<u>1,085.00</u>
RETURNS TO LABOR, MANAGEMENT AND INVESTMENT	<u>\$25,700</u>	<u>\$21,770.00</u>	<u>\$ 3,930.00</u>
14. Less Interest on Investment 3.32% x \$342,000 (land) = \$11,355 7% x \$38,350 (machinery and operating) = \$2,685	<u>14,040</u>	<u>8,775.00</u>	<u>5,265.00</u>
NET RETURNS TO LABOR & MANAGEMENT	<u>\$11,660</u>	<u>\$12,995.00</u>	<u>\$-1,335.00</u>

\*Allocations made on basis of acres  
\*\*Allocations made on basis of actual use

G. COSTS OF PRODUCING WHEAT

<u>Expenses</u>	<u>Total Cost</u>	<u>Cost Per A.*</u>	<u>Cost Per Bu.**</u>
1. Hired Labor, 104 days @ \$15/day	\$ 1,562.50	\$ 3.12	\$ .0781
2. Fuel	1,437.50	2.87	.0719
3. Car, Truck & Machinery Repair	1,143.75	2.29	.0572
4. Fertilizer, 60 lbs. N. \$5/A.	2,500.00	5.00	.1250
5. Crop Spray, 2-4-D \$2/A.	1,000.00	2.00	.0500
6. Seed & Seed Treatment, 45 lbs. \$2.40/bu.	900.00	1.80	.0450
7. Building Repair & Upkeep	31.25	.06	.0016
8. Taxes	1,387.50	2.77	.0694
9. Insurance	500.00	1.00	.0250
10. Electricity	112.50	.23	.0056
11. Licenses	125.00	.25	.0063
12. Other Farm Expense (phone, office supplies)	<u>125.00</u>	<u>.25</u>	<u>.0063</u>
TOTAL CASH OPERATING EXPENSE	\$10,825.00	21.65	.5412
13. Plus Depreciation	<u>1,805.00</u>	<u>3.61</u>	<u>.0902</u>
TOTAL EXPENSE (Does not include interest and operation, labor and management)	<u>\$12,630.00</u>	<u>\$25.27</u>	<u>\$ .6314</u>
14. Plus Interest on land, machinery and operating capital (from pg. 6)	<u>8,775.00</u>	<u>17.55</u>	<u>.4387</u>
TOTAL COST OF PRODUCING WHEAT	<u>\$21,405.00</u>	<u>\$42.82</u>	<u>\$ 1.0701</u>

\*Total cost divided by 500 acres  
\*\*Total cost divided by 20,000 bu. (500 acres x 40 bu.)



H. COST OF PRODUCING BARLEY

<u>Expenses</u>	<u>Total Cost</u>	<u>Cost Per A.*</u>	<u>Cost Per Ton**</u>
1. Hired Labor, 63 days @ \$15/day	\$ 938.00	\$ 3.12	\$ 3.12
2. Fuel	862.00	2.87	2.87
3. Car, Truck & Machinery Repair	686.00	2.29	2.29
4. Fertilizer, 60 lbs. N. \$5/A.	1,500.00	5.00	5.00
5. Crop Spray, 2-4-D \$2/A.	600.00	2.00	2.00
6. Seed & Seed Treatment, 48 lbs. \$60/Ton	430.00	1.43	1.43
7. Building Repair & Upkeep	19.00	.06	.06
8. Taxes	833.00	2.77	2.77
9. Insurance	300.00	1.00	1.00
10. Electricity	68.00	.23	.23
11. Licenses	75.00	.25	.25
12. Other Farm Expense (phone, office supplies)	<u>75.00</u>	<u>.25</u>	<u>.25</u>
TOTAL OPERATING EXPENSE	6,385.00	21.28	21.28
13. Plus Depreciation	<u>1,085.00</u>	<u>3.62</u>	<u>3.62</u>
TOTAL EXPENSE (Does not include interest and operator's labor and management)	\$ <u>7,470.00</u>	\$ <u>24.90</u>	\$ <u>24.90</u>
14. Plus Interest on Investment, Land & Machinery (From page 7)	<u>5,265.00</u>	<u>17.55</u>	<u>17.55</u>
TOTAL COST OF PRODUCING BARLEY	\$ <u>12,735.00</u>	\$ <u>42.45</u>	\$ <u>42.45</u>

\*Total cost divided by 300 acres

\*\*Total cost divided by 300 tons (1 Ton/Acre)

The actual rate of return to land based on 1/3 and 2/5 crop share rents is shown below.

Table 1. OPERATING BUDGET BASED ON SHARE RENT FOR 500 ACRES OF WHEAT AND 300 ACRES OF BARLEY ON A WHEAT FALLOW FARM

	1/3 SHARE RENT			2/5 SHARE RENT		
	Total Farm or Owner- Operator	Tenant	Landlord	Total Farm or Owner- Operator	Tenant	Landlord
Total Capital Investment	\$380,350	\$38,350	\$342,000	\$380,350	\$38,350	\$342,000
<u>Receipts</u>						
Wheat (500 A x 40 bu. = 20,000 bu. @ \$1.72/bu.)	34,400	22,935	11,465	34,400	20,640	13,760
Barley - 300 A x 1 T = 300 T @ \$38/T	11,400	7,600	3,800	11,400	6,840	4,560
TOTAL INCOME	\$ <u>45,800</u>	\$ <u>30,535</u>	\$ <u>15,265</u>	\$ <u>45,800</u>	\$ <u>27,480</u>	\$ <u>18,320</u>
<u>Expenses</u>						
1. Hired Labor	2,500	2,500	---	2,500	2,500	---
2. Fuel	2,300	2,300	---	2,300	2,300	---
3. Car, Truck & Mach. Repair	1,830	1,830	---	1,830	1,830	---
4. Crop Spray	1,600	1,070	530	1,600	960	640
5. Fertilizer	4,000	2,670	1,330	4,000	2,400	1,600
6. Seed & Seed Treatment	1,330	1,330	---	1,330	1,330	---
7. Building Repair & Upkeep	50	---	50	50	---	50
8. Taxes	2,220	500	1,720	2,220	500	1,720
9. Insurance	800	600	200	800	600	200
10. Electricity	180	180	---	180	180	---
11. Licenses	200	200	---	200	200	---
12. Other Farm Expense (phone, office supplies)	200	200	---	200	200	---
TOTAL CASH EXPENSES (Does not include depreciation, interest, labor or management)	\$ <u>17,210</u>	\$ <u>13,380</u>	\$ <u>3,830</u>	\$ <u>17,210</u>	\$ <u>13,000</u>	\$ <u>4,210</u>
13. Depreciation	2,890	2,810	80	2,890	2,810	80
TOTAL EXPENSE (Does not include interest, labor and management)	\$ <u>20,100</u>	\$ <u>16,190</u>	\$ <u>3,910</u>	\$ <u>20,100</u>	\$ <u>15,810</u>	\$ <u>4,290</u>
RETURN TO LABOR, MANAGEMENT AND INVESTMENT	\$ <u>25,700</u>	\$ <u>14,345</u>	\$ <u>11,355</u>	\$ <u>25,700</u>	\$ <u>11,670</u>	\$ <u>14,030</u>
Less share rent return to land	11,355	---	---	14,030	---	---
Less Operating Interest	<u>2,685</u>	<u>2,685</u>	---	<u>2,685</u>	<u>2,685</u>	---
RETURN LABOR & MANAGEMENT	\$ <u>11,660</u>	\$ <u>11,660</u>	---	\$ <u>8,985</u>	\$ <u>8,985</u>	---
14. Interest rate earned on land investment (Based on share rent return to land)	3.32%		3.32%	4.11%		4.11%
Interest rate paid on mach. & operating capital	7.0%	7.0%	---	7.0%	7.0%	---