


<p>Farm Business Management Reports</p>		<p>EB1838</p>
	<p>1997 ENTERPRISE BUDGETS SUMMER FALLOW - WINTER WHEAT - SPRING BARLEY ROTATION COLUMBIA COUNTY, WASHINGTON STATE</p>	
	<p>Herbert Hinman Roland Schirman</p>	
<p>COOPERATIVE EXTENSION WASHINGTON STATE  UNIVERSITY</p>		

## PREFACE

Enterprise costs and returns vary from one location to the next and over time for any particular farming operation. Variability stems from differences in the following:

- . Capital, labor, and natural resources
- . Type and size of machinery complement
- . Cultural practices
- . Size of farm enterprise
- . Crop yields
- . Input prices
- . Commodity prices
- . Management skill

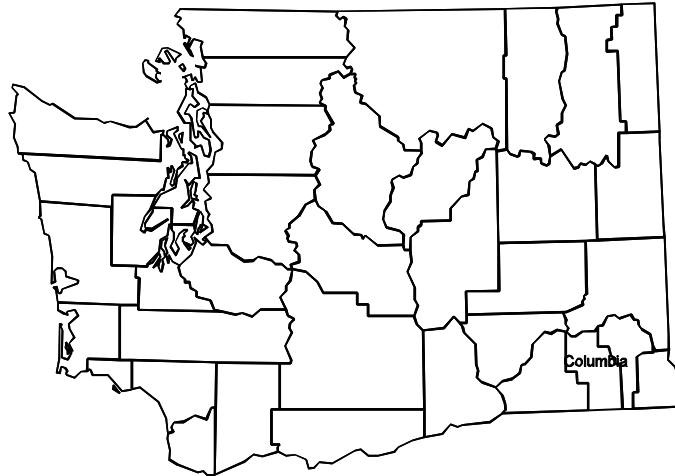
Costs can also be calculated differently depending on the intended use of the cost estimate. The information in this publication serves as an estimate of the costs and returns for growing wheat and barley under dryland conditions in the 16- to 18-inch rainfall area of Columbia County, Washington. To avoid drawing unwarranted conclusions for any particular farm or group of farms, the reader must closely examine the assumptions used. If they are not appropriate for the situation under consideration, adjustments in the costs and/or returns should be made.

**1997 CROP ENTERPRISE BUDGETS  
SUMMER FALLOW - WINTER WHEAT - SPRING BARLEY ROTATION  
COLUMBIA COUNTY, WASHINGTON STATE**

Herbert Hinman and Roland Schirman<sup>1</sup>

**INTRODUCTION**

This publication presents estimated costs and returns for winter wheat after summer fallow and spring barley after winter wheat, the common crop rotation in the 16- to 18-inch rainfall area of Columbia County. Producers, agricultural lenders, and others should find this information helpful in identifying enterprise strengths and weaknesses, planning production adjustments, determining financial requirements, making marketing decisions, and analyzing other business management issues.



**Figure 1.** Columbia County, Washington

The enterprise data represent costs and returns under the specific assumptions adopted for the study, not a particular farm. Individual growers will need to use the blanks provided on the right-hand side of these budget estimates to make adjustments for their costs and returns. Additional help is available through local Cooperative Extension agents and field persons for questions and/or suggestions on field operations and operating inputs.

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<sup>1</sup>Extension Economist and Columbia County Extension Agent, respectively, Cooperative Extension, Washington State University.

## SOURCES OF INFORMATION

A committee of experienced Columbia County wheat producers was assembled at the request of the county agent. They identified the machinery complement, field operations, and inputs commonly used on well-managed operations. The producers also determined the price to use for labor, including social security tax, labor and industrial insurance, plus any perks that may be provided such as housing, vehicles, gasoline, etc. The price of labor also represents what the owner-operator calculates as a fair return to his/her labor. Local farm suppliers were contacted to obtain current price information on materials and services commonly used. Machinery costs were based on current replacement prices and on rates of annual use considered typical for a 2,100-acre farm.

## TRANSITION PAYMENTS

The federal government is stopping all wheat and feed grain subsidy payments to farmers. However, instead of stopping these payments immediately, there is a transition period over which subsidy payments are to be phased out. Thus, from 1997 through the year 2002 wheat and barley farmers will receive a transition payment on 85% of their base acreage for wheat and barley times their established yields. These transition payments vary from year to year and will be paid regardless of the crop mix grown. The transition payments for wheat and barley are the following:

Year	Transition Payment	
	Wheat	Barley
	(Bu.)	(Ton)
	\$	\$
1997	0.61	10.43
1998	0.65	10.83
1999	0.63	10.00
2000	0.57	9.16
2001	0.46	8.34
2002	0.45	7.50

Thus, if we assume that a farm has a base acreage for wheat of 700 acres with an established yield of 70 bushels and a base acreage for barley of 700 acres, the total transition payments for 1997 through 2002 will equal:

1997	700 acres X 70 bu. X \$ 0.61 X 85% =	\$25,406.50
	700 acres X 1.6 T. X \$10.43 X 85% =	<u>9,929.36</u>
		\$35,335.86
1998	700 acres X 70 bu. X \$ 0.65 X 85% =	\$27,072.50
	700 acres X 1.6 T. X \$10.83 X 85% =	<u>10,310.16</u>
		\$37,382.66

1999	700 acres X 70 bu. X \$ 0.63 X 85% =	\$26,239.50
	700 acres X 1.6 T. X \$10.00 X 85% =	<u>9,520.00</u>
		\$35,759.50
2000	700 acres X 70 bu. X \$ 0.57 X 85% =	\$23,740.50
	700 acres X 1.6 T. X \$ 9.16 X 85% =	<u>8,720.32</u>
		\$32,460.82
2001	700 acres X 70 bu. X \$ 0.46 X 85% =	\$19,159.00
	700 acres X 1.6 T. X \$ 8.34 X 85% =	<u>7,939.68</u>
		\$27,098.68
2002	700 acres X 70 bu. X \$ 0.45 X 85% =	\$18,742.50
	700 acres X 1.6 T. X \$ 7.50 X 85% =	<u>7,140.00</u>
		\$25,882.50

**After 2002, all transition payments cease** and the returns for wheat and barley will depend solely upon yield and market price. Thus, since these transition payments are received regardless of the crop mix grown, they are not figured into the expected returns of the crops grown in this study. The expected returns from wheat and peas are based solely upon expected yield times the expected price.

#### BUDGET ASSUMPTIONS

The following assumptions were made in developing the data:

1. For reasons mentioned above, program payments are not included in the analysis.
2. The representative farm includes 2,100 acres with 700 acres in summer fallow, 700 acres in winter wheat, and 700 acres in spring barley, annually.
3. Wheat yield is assumed to be 70 bushels per acre and the barley yield is assumed to be 1.6 tons per acre. It should be realized, however, that yields vary by year and location in Columbia County, and varied yields have a substantial impact on break-even prices.
4. The farm gate price to the grower for wheat, net of transportation and marketing costs, is \$3.95 per bushel. The assumed price for spring barley is \$97 per ton.
5. Machinery is valued at current replacement prices. Machinery on farms of the representative size in Columbia County are typically replaced used. While valuing machinery at replacement cost may overstate current production costs, it provides an indication of the enterprise's ability to generate the earnings needed to replace depreciable assets. Increases in prices mean that depreciation claimed on assets purchased prior to price advances understate the amount of capital required for asset replacement. When an enterprise

is evaluated to determine its long-run viability, it is important to consider its ability to replace depreciable assets on a replacement cost basis.

6. The prevailing interest rate for both operating and capital asset investments is 10.5%.
7. The farm is owned, managed, and operated by the same person.

The budget should be viewed as "typical" or "representative," rather than a mathematical average of a large number of producers. Quite different enterprise costs and returns may result where such factors as farm size, machinery complement and use, cultural practices, and yield differ from those assumed in this publication. Also, this budget includes only production costs and does not include storage, handling, transportation, and interest costs faced by the farmer in marketing wheat and barley.

#### **DISCUSSION OF BUDGET INFORMATION**

The budget information for the summer fallow and winter wheat enterprise is reported in sixteen separate tables.

Tables 1, 4, and 7: Schedule of Operations and Costs Per Acre

Tables 1, 4, and 7 outline the schedule of field operations by calendar month, the type of machinery used, and the hours used per acre for summer fallow after spring barley, winter wheat after summer fallow, and spring barley after winter wheat, respectively. The costs are divided into two categories. The first is machinery and land fixed costs. The second category, variable costs, is associated with operating machinery, labor, and purchasing services and materials. Total cost is the sum of fixed and variable costs.

Machinery fixed costs include depreciation, interest on the investment, property taxes, and insurance. These costs do not vary with the crops produced, given the ownership of a specific machinery complement, and are incurred whether or not a crop is grown. The per-hour fixed costs are determined by dividing the total annual fixed cost by the annual hours of machinery use for the representative farm. Machinery fixed costs for a specific field operation are determined by multiplying the machine hours per acre times the per-hour fixed cost (Table 12).

Land fixed costs include taxes and net rent. Net rent is based on rental agreements typical for the area minus expenditures typically covered by the landlord. The typical lease agreement is a one-third landlord and two-third tenant crop share, with the landlord paying land taxes, one-third of the fertilizer cost, and one-third of the crop insurance, and all the

chemical for perennial weed control. The tenant covers all other production expenses.

Thus, net rent per acre for winter wheat is calculated as follows:

\$92.17	(one-third gross receipts from production)
- \$10.00	(land tax; summer fallow and winter wheat)
- \$ 9.72	(chemical for perennial weed control; summer fallow and winter wheat)
- <u>\$11.14</u>	(one-third fertilizer, and one-third crop insurance costs)
\$61.31	Net Rent per Acre

The net rent per acre for spring barley is calculated as follows:

\$51.73	(one-third gross receipts from production)
- \$ 5.00	(land tax)
- <u>\$ .62</u>	(one-third crop insurance)
\$46.11	Net Rent per Acre

While the owner-operator does not actually experience a land rental cost, the cost represents the minimum returns the owner-operator must have to justify growing this crop. This net rent return represents the income the owner-operator foregoes by producing this crop rather than renting to a tenant who produces the crop. Thus, the appropriate land charge for the owner-operator growing the crop is equal to the net rent lost. As used in this publication, land cost is termed an opportunity cost to indicate that it is not an out-of-pocket expense, but rather a return that is foregone as a result of choosing to use the land to grow this crop. To determine the profitability of crop production relative to other activities, the owner-operator may want to consider these foregone returns, or opportunity costs, along with the usual production expenses. Of course, for the individual producer, any land costs that are actual cash costs, such as interest payments on loans outstanding or land rent payments, must be identified and treated as cash costs and not as opportunity costs. Changes in land value are not considered as part of this enterprise.

In Table 4, the previous year's summer fallow costs, plus interest, are included as part of the fixed cost of raising winter wheat. These are costs that must ultimately be covered by wheat sales if the enterprise is to remain profitable.

Variable costs vary directly with the crop grown and the number of acres produced. Variable costs include fuel, oil, repairs, fertilizer, chemicals, custom work, overhead, and interest on operating capital. Machine operating labor, including that provided by the owner-operator, is also included as a variable cost.

Tables 2, 5, and 8: Materials and Services Provided by Operation

Tables 1, 4, and 7, "Schedule of Operations and Estimated Cost Per Acre...." for both summer fallow, winter wheat, and spring barley list under the "Service" column and "Materials" column dollar figures for services and materials used by different operations. Tables 2, 5, and 8 list, by operation, specific services and/or materials used, quantities used, and prices paid for summer fallow, winter wheat, and spring barley, respectively.

Tables 3, 6, and 9: Itemized Cost Per Acre

Tables 3, 6, and 9 itemize the costs appearing in the "Schedule of Operations and Costs per Acre" for summer fallow, winter wheat, and spring barley, respectively. Most of the items are self-explanatory or have been previously explained. Two entries, "Interest on Tractors" and "Interest on Machinery," warrant additional explanation.

Tractor and machinery interest costs are calculated on the average annual investment in the machine. The formula used to calculate the average machine investment is:

$$\frac{\text{Purchase cost} + \text{Salvage value}}{2}$$

The 10.5% interest charge made against this average investment represents either an opportunity cost (returns foregone by investing in the given machine rather than in an alternative investment) or interest paid on money borrowed to finance machine purchases, or both. Interest cost for one acre of summer fallow or winter wheat is determined by multiplying the respective machine and/or tractor hours per acre times the per hour interest costs (Table 12).

Table 10: Machinery Complement

This table identifies the machine complement used to derive the budget. Typically, most pieces of machinery on Columbia County farms of the representative size are purchased used. Pickups are generally replaced new. Table 10 presents the types of machines used on the representative farm, their current replacement price (new or used), years of use before trade-in, salvage value at trade-in, annual repair cost, and annual hours of use.

Table 11: Hourly Machinery Costs

The data in Table 11 are used to estimate the per-hour fixed and variable costs. Machinery and building fixed costs include depreciation and interest on investment, property taxes, and insurance; these are costs that do not vary with crop grown or number of acres produced. Current replacement costs are used for

all machinery.<sup>2</sup> Note that interest on investment represents an 10.5% opportunity cost to the enterprise. These are earnings foregone by investing money in the machinery rather than the next best alternative. This may also represent the interest paid on funds borrowed to purchase machinery.

Machinery variable costs include machine repair, fuel, and lubrication--costs that vary with the crop grown or the number of acres produced.

Table 12: Prices for Selected Inputs

The 1997 prices used for fuel, chemicals, and other inputs are listed in Table 12.

SUMMARY OF RESULTS AND CONCLUDING NOTE

This publication presents estimated production costs of winter wheat and spring barley grown in the 16- to 18-inch rainfall area in Columbia County. The yields and prices received for these crops are 1997 projections. The variable, fixed and total cost, and the break-even prices for winter wheat and dry peas under the given assumptions are the following:

	<u>Winter Wheat</u>	<u>Spring Barley</u>
Variable Cost	\$172	\$129
Fixed Cost	\$118	\$ 77
Total Cost	\$290	\$206
Estimated Yield	70 Bu.	1.6 Tons
	<u>Winter Wheat</u>	<u>Spring Barley</u>
Break-Even Price/Unit	\$4.24	\$144.88

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<sup>2</sup>Resources to help producers estimate their machinery cost are the following:

MACHCOST - A Machinery Cost Analysis Computer Program, Department of Agricultural Economics and Rural Sociology, University of Idaho.

The Cost of Owning and Operating Farm Machinery in the Pacific Northwest, PNW 346, A Pacific Northwest Extension Publication, Washington State University - University of Idaho - Oregon State University.

These budgets are representative of the costs producers in the 16- to 18-inch rainfall area of Columbia County are currently facing when producing these crops. During times in which returns do not cover total costs, producers remain in business by postponing equipment replacement and by accepting a lower return for their labor and equity.

Users of these budgets should fully comprehend the procedures and assumptions used in this study and interpret the results accordingly. The budgets do not represent any one particular operation. Therefore, the budgets should be used as a general guide to help derive budgets for a particular operation. Moreover, this publication is not intended as a guide to recommend production practices. Rather, it represents production practices used in the area.

TABLE 1. 1997 SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SUMMER FALLOW FOLLOWING SPRING BARLEY IN THE 16- TO 18-INCH RAINFALL AREA, COLUMBIA COUNTY, WASHINGTON.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST	
						TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE MATER.	INTER.			
						\$	\$	\$	\$	\$	\$	\$	
HERBICIDE	185HP-CT, 60' SPRAYER	MAR	1997	.03	.04	.33	.67	.52	1.50	4.49	.31	7.49	7.82
HAUL WATER	3T TRUCK W/1500 GAL. SLIP TANK	MAR	1997	.02	.04	.30	.34	.48	.00	.00	.04	.86	1.16
CULTIVATE	185HP-CT, 35' CULT W/TINE HAR	MAY	1997	.13	.14	3.07	3.70	1.65	.00	.00	.14	5.49	8.55
CULTIWEED	185HP-CT, 36' CULTIWEEDER	MAY	1997	.08	.09	2.04	2.69	1.10	.00	.00	.10	3.89	5.93
RODWEED	185HP-CT, 36' CULTIWEEDER	JUN	1997	.08	.08	1.89	2.34	1.02	.00	.00	.06	3.41	5.30
WEED CONTROL	PERENNIAL WD CTL, CUSTM AERIAL	AUG	1997	.00	.00	.00	.00	.00	4.50	9.72	.00	14.22	14.22
MACHINE TRANSPT	3 TON TRUCK	ANN	1997	.01	.02	.15	.17	.24	.00	.00	.02	.43	.58
MISC USE	3/4 TON PICKUP	ANN	1997	.24	.26	2.30	1.70	3.14	.00	.00	.25	5.10	7.40
MISC USE	52HP-WT W/BUCKET	ANN	1997	.05	.06	.74	.27	.66	.00	.00	.05	.98	1.72
MISC USE	4WD ATV	ANN	1997	.07	.08	.38	.17	.92	.00	.00	.06	1.15	1.53
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	2.58	.00	2.58	2.58
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
TOTAL PER ACRE				.71	.81	16.20	12.04	9.73	6.00	16.79	1.03	45.59	61.80

TABLE 2. MATERIALS AND SERVICES PROVIDED BY OPERATION FOR SUMMER FALLOW FOLLOWING SPRING BARLEY IN THE 16- TO 18-INCH RAINFALL AREA, COLUMBIA COUNTY, WASHINGTON.

OPERATION	MONTH	MATERIAL AND/OR SERVICE
Herbicide	March	12 Oz. of Roundup @ \$11.97/Qt. Rented applicator @ \$1.50/Acre
Weed Control	Annual	54 Oz. of Landmaster @ 18¢/Oz.
Overhead	Annual	6% Variable cost

**TABLE 3. 1997 ITEMIZED COST PER ACRE FOR SUMMER FALLOW FOLLOWING  
 SPRING BARLEY IN THE 16- TO 18-INCH RAINFALL AREA,  
 COLUMBIA COUNTY, WASHINGTON.**

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM
<b>VARIABLE COSTS</b>					
		\$		\$	
ROUNDUP	QT.	11.97	.38	4.49	_____
60' SPRAYER	ACRE	1.50	1.00	1.50	_____
LANDMASTER	OZ.	.18	54.00	9.72	_____
CUSTOM AERIAL	ACRE	4.50	1.00	4.50	_____
TRACTOR REPAIR	ACRE	5.06	1.00	5.06	_____
TRACTOR FUEL/LUBE	ACRE	2.64	1.00	2.64	_____
MACHINERY REPAIRS	ACRE	3.17	1.00	3.17	_____
MACHINE FUEL/LUBE	ACRE	1.17	1.00	1.17	_____
LABOR(TRAC/MACH)	HR	12.00	.81	9.73	_____
OVERHEAD	ACRE	2.58	1.00	2.58	_____
INTEREST ON OP. CAP.	ACRE	1.03	1.00	1.03	_____
<b>TOTAL VARIABLE COST</b>				<b>45.59</b>	_____
<b>FIXED COSTS</b>					
		\$		\$	
TRACTOR DEPRECIATION	ACRE	1.52	1.00	1.52	_____
TRACTOR INTEREST	ACRE	2.00	1.00	2.00	_____
TRACTOR INSURANCE	ACRE	.11	1.00	.11	_____
TRACTOR TAXES	ACRE	.34	1.00	.34	_____
TRACTOR HOUSING	ACRE	.19	1.00	.19	_____
MACHINE DEPRECIATION	ACRE	3.23	1.00	3.23	_____
MACHINE INTEREST	ACRE	2.87	1.00	2.87	_____
MACHINE INSURANCE	ACRE	.16	1.00	.16	_____
MACHINE TAXES	ACRE	.49	1.00	.49	_____
MACHINE HOUSING	ACRE	.27	1.00	.27	_____
LAND TAX	ACRE	5.00	1.00	5.00	_____
<b>TOTAL FIXED COST</b>				<b>16.20</b>	_____
<b>TOTAL COST</b>				<b>61.80</b>	_____

TABLE 4. 1997 SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR WINTER WHEAT FOLLOWING SUMMER FALLOW IN THE 16- TO 18-INCH RAINFALL AREA, COLUMBIA COUNTY, WASHINGTON.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
							\$	\$	\$	\$	\$	\$	\$
FERTILIZE	185HP-CT, 45' FERT. APPLICATOR	SEP	1996	.06	.07	.58	1.18	.88	.00	30.96	3.18	36.20	36.78
CULTIWEED	185HP-CT, 36' CULTIWEEDER	SEP	1996	.08	.09	2.04	2.69	1.10	.00	.00	.36	4.15	6.20
PLANT	185HP-CT, 30' DISC DRILL	SEP	1996	.17	.21	7.26	5.23	2.50	.00	9.00	1.61	18.34	25.60
HAUL SEED	3 TON TRUCK	SEP	1996	.02	.04	.30	.34	.48	.00	.00	.08	.90	1.20
HERBICIDE, 50%	185HP-CT, 60' SPRAYER	MAR	1997	.02	.02	.16	.33	.26	.75	7.50	.39	9.23	9.40
HAUL WATER, 50%	3T TRUCK W/1500 GAL. SLIP TANK	MAR	1997	.01	.02	.15	.17	.24	.00	.00	.02	.43	.58
HERBICIDE, 50%	CUSTOM AERIAL	MAR	1997	.00	.00	.00	.00	.00	2.25	7.50	.43	10.18	10.18
CROP INSURANCE	HAIL, FIRE AND MULTI-PERIL	MAY	1997	.00	.00	.00	.00	.00	2.45	.00	.06	2.51	2.51
HARVEST	22' COMBINE	JUL	1997	.27	.32	10.93	11.06	3.84	.00	.00	.13	15.03	25.96
HAUL	3 TON TRUCK (5 - 10 YEARS OLD)	JUL	1997	.20	.32	3.03	3.42	3.84	.00	.00	.06	7.32	10.35
HAUL	3 TON TRUCK (> 10 YRS OLD)	JUL	1997	.20	.32	1.56	3.07	3.84	.00	.00	.06	6.97	8.53
MACHINE TRANSP	3 TON TRUCK	ANN	1997	.01	.02	.15	.17	.24	.00	.00	.02	.43	.58
MISC USE	3/4 TON PICKUP	ANN	1997	.24	.26	2.30	1.70	3.14	.00	.00	.25	5.10	7.40
MISC USE	52HP-WT W/BUCKET	ANN	1997	.05	.06	.74	.27	.66	.00	.00	.05	.98	1.72
MISC USE	4WD ATV	ANN	1997	.07	.08	.38	.17	.92	.00	.00	.06	1.15	1.53
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	7.14	.00	7.14	7.14
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	61.31	.00	.00	.00	.00	.00	.00	61.31
ESTAB. COST	SUMMER FAL. COST PLUS INTEREST	ANN	1997	.00	.00	68.29	.00	.00	.00	.00	.00	.00	68.29
TOTAL PER ACRE				1.39	1.83	164.18	29.81	21.95	5.45	62.10	6.76	126.07	290.25

TABLE 5. MATERIALS AND SERVICES PROVIDED BY OPERATION FOR WINTER WHEAT FOLLOWING SUMMER FALLOW IN THE 16- TO 18-INCH RAINFALL AREA, COLUMBIA COUNTY, WASHINGTON.

OPERATION	MONTH	MATERIAL AND/OR SERVICE
Fertilize	September	80 Lbs. of nitrogen @ 31.5¢/Lb. 12 Lbs. of sulfur @ 48¢/Lb.
Plant	September	75 Lbs. of wheat seed @ 12¢/Lb.
Herbicide, 50%**	March	Spring herbicide @ \$15.00/Acre* Rented applicator @ \$1.50/Acre*
Herbicide, 50%**	March	Spring herbicide @ \$15.00/Acre* Aerial application @ \$4.50/Acre*
Crop Insurance	May	Hail, fire and multi-peril crop insurance @ \$2.45/Acre
Overhead	Annual	6% Variable cost

\* Per actual acre applied.

\*\* 50% of the acres are applied using an aerial applicator and 50% of the acres are applied using a ground applicator.

**TABLE 6. 1997 ITEMIZED COST PER ACRE FOR WINTER WHEAT FOLLOWING  
SUMMER FALLOW IN THE 16- TO 18- INCH RAINFALL AREA,  
COLUMBIA COUNTY, WASHINGTON.**

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM
<b>VARIABLE COSTS</b>					
		\$		\$	
WHEAT SEED	LB.	.12	75.00	9.00	_____
NITROGEN (AI)	LB.	.315	80.00	25.20	_____
SULFUR (AI)	LB.	.48	12.00	5.76	_____
SPRING HERBICIDE	ACRE	15.00	1.00	15.00	_____
60' SPRAYER	ACRE	1.50	.50	.75	_____
CUSTOM AERIAL	ACRE	4.50	.50	2.25	_____
CROP INSURANCE	ACRE	2.45	1.00	2.45	_____
TRACTOR REPAIR	ACRE	5.11	1.00	5.11	_____
TRACTOR FUEL/LUBE	ACRE	2.35	1.00	2.35	_____
MACHINERY REPAIRS	ACRE	17.90	1.00	17.90	_____
MACHINE FUEL/LUBE	ACRE	4.46	1.00	4.46	_____
LABOR(TRAC/MCH)	HDUR	12.00	1.83	21.95	_____
OVERHEAD	ACRE	7.14	1.00	7.14	_____
INTEREST ON OP. CAP.	ACRE	6.76	1.00	6.76	_____
<b>TOTAL VARIABLE COST</b>				<b>126.07</b>	_____
<b>FIXED COSTS</b>					
		\$		\$	
TRACTOR DEPRECIATION	ACRE	1.53	1.00	1.53	_____
TRACTOR INTEREST	ACRE	2.02	1.00	2.02	_____
TRACTOR INSURANCE	ACRE	.12	1.00	.12	_____
TRACTOR TAXES	ACRE	.35	1.00	.35	_____
TRACTOR HOUSING	ACRE	.19	1.00	.19	_____
MACHINE DEPRECIATION	ACRE	11.27	1.00	11.27	_____
MACHINE INTEREST	ACRE	10.66	1.00	10.66	_____
MACHINE INSURANCE	ACRE	.61	1.00	.61	_____
MACHINE TAXES	ACRE	1.83	1.00	1.83	_____
MACHINE HOUSING	ACRE	1.02	1.00	1.02	_____
LAND TAX	ACRE	5.00	1.00	5.00	_____
SUM FAL. COST	ACRE	61.80	1.105	68.29	_____
NET RENT	ACRE	61.31	1.00	61.31	_____
<b>TOTAL FIXED COST</b>				<b>164.18</b>	_____
<b>TOTAL COST</b>				<b>290.25</b>	_____

TABLE 7. 1997 SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SPRING BARLEY FOLLOWING WINTER WHEAT IN THE 16- TO 18-INCH RAINFALL AREA, COLUMBIA COUNTY, WASHINGTON.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST	
						TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE MATER.	INTER.			
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<div style="display: flex; justify-content: space-between;"> <span>\$</span> <span>\$</span> <span>\$</span> <span>\$</span> <span>\$</span> <span>\$</span> <span>\$</span> </div>													
HERBICIDE, 50%	185HP-CT, 60' SPRAYER	MAR	1997	.02	.02	.16	.33	.26	.75	3.09	.19	4.63	4.79
HAUL WATER, 50%	3T TRUCK W/1500 GAL. SLIP TANK	MAR	1997	.01	.02	.15	.17	.24	.00	.00	.02	.43	.58
HERBICIDE, 50%	CUSTOM AERIAL	MAR	1997	.00	.00	.00	.00	.00	2.25	3.09	.23	5.57	5.57
BURN	BURN PERMIT AND LABOR COST	MAR	1997	.00	.00	.00	.00	.00	1.00	.00	.04	1.04	1.04
CULTIVATE	185HP-CT, 36' CULT W/TINE HAR	MAR	1997	.13	.14	3.07	3.70	1.65	.00	.00	.23	5.58	8.65
FERTILIZE	185HP-CT, 45' FERT. APPLICATOR	MAR	1997	.06	.07	.58	1.18	.88	.00	36.81	1.70	40.57	41.15
HAUL SEED	3 TON TRUCK	APR	1997	.02	.04	.30	.34	.48	.00	.00	.03	.85	1.15
PLANT	185HP-CT, 30' DISC DRILL	APR	1997	.17	.21	7.26	5.23	2.50	.00	12.15	.70	20.58	27.84
HAUL WATER	3T TRUCK W/1500 GAL. SLIP TANK	MAY	1997	.02	.04	.30	.34	.48	.00	.00	.02	.84	1.15
HERBICIDE	185HP-CT, 60' SPRAYER	MAY	1997	.03	.04	.33	.67	.52	1.50	7.37	.26	10.32	10.65
CROP INSURANCE	HAIL, FIRE AND MULTI-PERIL	MAY	1997	.00	.00	.00	.00	.00	1.85	.00	.05	1.90	1.90
INSECTICIDE, 25%	CUSTOM AERIAL	MAY	1997	.00	.00	.00	.00	.00	1.13	2.18	.09	3.40	3.40
HARVEST	22' COMBINE	JUL	1997	.16	.19	6.61	6.69	2.33	.00	.00	.08	9.10	15.71
HAUL	3 TON TRUCK (5 - 10 YEARS OLD)	JUL	1997	.15	.19	2.27	2.57	2.33	.00	.00	.04	4.94	7.21
HAUL	3 TON TRUCK (> 10 YRS OLD)	JUL	1997	.15	.19	1.17	2.30	2.33	.00	.00	.04	4.67	5.84
MACHINE TRANSPT	3 TON TRUCK	ANN	1997	.01	.02	.15	.17	.24	.00	.00	.02	.43	.58
MISC USE	3/4 TON PICKUP	ANN	1997	.24	.26	2.30	1.70	3.14	.00	.00	.25	5.10	7.40
MISC USE	52HP-WT W/BUCKET	ANN	1997	.05	.06	.74	.27	.66	.00	.00	.05	.98	1.72
MISC USE	4WD ATV	ANN	1997	.07	.08	.38	.17	.92	.00	.00	.06	1.15	1.53
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	7.32	.00	7.32	7.32
LAND COST	NET RENT	ANN	1997	.00	.00	46.11	.00	.00	.00	.00	.00	.00	46.11
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
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TOTAL PER ACRE				1.28	1.58	76.89	25.83	18.96	8.47	72.02	4.11	129.40	206.29
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TABLE 8. MATERIALS AND SERVICES PROVIDED BY OPERATION FOR SPRING BARLEY FOLLOWING WINTER WHEAT IN THE 16- TO 18-INCH RAINFALL AREA, COLUMBIA COUNTY, WASHINGTON.

OPERATION	MONTH	MATERIAL AND/OR SERVICE
Herbicide, 50%**	March	Rented applicator @ \$1.50/Acre* 0.5 Qts. of Roundup @ \$11.97/Qt.* 1.5 Lbs. of ammonium sulfate @ 13¢/Lb.*
Herbicide, 50%**	March	Aerial application @ \$4.50/Acre* 0.5 Qts. of Roundup @ \$11.97/Qt.* 1.5 Lbs. of ammonium sulfate @ 13¢/Lb.*
Burn	March	Burn permit and labor @ \$1.00/Acre
Fertilize	March	70 Lbs. of nitrogen @ 31.5¢/Lb. 12 Lbs. of sulfur @ 48¢/Lb. 20 Lbs. of phosphate @ 45¢/Lb.
Herbicide	May	Rented applicator @ \$1.50/Acre 1.5 Pints of MCPA @ \$2.29/Pint 1.0 Quart of Hoelon @ \$19.66/Quart***
Plant	April	90 Lbs. of barley seed @ 13.5¢/Lb.
Crop Insurance	May	Hail, fire and multi-peril crop insurance @ \$1.85/Acre
Insecticide, 25%	May	Aerial application @ \$4.50/Acre* 1 Qt. of dimethoate @ \$8.74/Qt.*
Overhead	Annual	6% Variable cost

\* Per actual acre applied.

\*\* 50% of the acres are applied using an aerial applicator and 50% of the acres are applied using a ground applicator.

\*\*\*Per actual acre applied. Applied to 20% of the acreage.

**TABLE 9. 1997 ITEMIZED COST PER ACRE FOR SPRING BARLEY FOLLOWING  
WINTER WHEAT IN THE 16- TO 18-INCH RAINFALL AREA,  
COLUMBIA COUNTY, WASHINGTON.**

		PRICE OR	VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	FARM
<b>VARIABLE COSTS</b>				
		\$		\$
ROUNDUP	QT.	11.97	.50	5.98
AMMN. SULFATE	LB.	.13	1.50	.20
NITROGEN (AI)	LB.	.32	70.00	22.05
SULFUR (AI)	LB.	.48	12.00	5.76
PHOSPHATE	LB.	.45	20.00	9.00
BARLEY SEED	LB.	.14	90.00	12.15
MCPA	PINT	2.29	1.50	3.44
HDELON	QT.	19.66	.20	3.93
DIMETHDATE	QT.	8.74	.25	2.18
60' SPRAYER	ACRE	1.50	1.50	2.25
CUSTOM AERIAL	ACRE	4.50	.75	3.38
BURN PM&LABOR	ACRE	1.00	1.00	1.00
CROP INSURANCE	ACRE	1.85	1.00	1.85
TRACTOR REPAIR	ACRE	6.24	1.00	6.24
TRACTOR FUEL/LUBE	ACRE	2.96	1.00	2.96
MACHINERY REPAIRS	ACRE	13.22	1.00	13.22
MACHINE FUEL/LUBE	ACRE	3.41	1.00	3.41
LABOR(TRAC/MACH)	HDUR	12.00	1.58	18.96
OVERHEAD	ACRE	7.32	1.00	7.32
INTEREST ON OP. CAP.	ACRE	4.11	1.00	4.11
<b>TOTAL VARIABLE COST</b>				<b>129.40</b>
<b>FIXED COSTS</b>				
		\$		\$
TRACTOR DEPRECIATION	ACRE	1.82	1.00	1.82
TRACTOR INTEREST	ACRE	2.39	1.00	2.39
TRACTOR INSURANCE	ACRE	.14	1.00	.14
TRACTOR TAXES	ACRE	.41	1.00	.41
TRACTOR HOUSING	ACRE	.23	1.00	.23
MACHINE DEPRECIATION	ACRE	9.35	1.00	9.35
MACHINE INTEREST	ACRE	8.65	1.00	8.65
MACHINE INSURANCE	ACRE	.49	1.00	.49
MACHINE TAXES	ACRE	1.48	1.00	1.48
MACHINE HOUSING	ACRE	.82	1.00	.82
NET RENT	ACRE	46.11	1.00	46.11
LAND TAX	ACRE	5.00	1.00	5.00
<b>TOTAL FIXED COST</b>				<b>76.89</b>
<b>TOTAL COST</b>				<b>206.29</b>

TABLE 10. MACHINE DATA - SUMMER FALLOW/WINTER WHEAT/SPRING BARLEY

Machine Name	Purchase Price	Years of Use	Salvage Value	Annual Repair Cost	Annual Hours of Use	Fuel Use Per Hour
185HP-CT, 15Yr	57,000	20	5,700	10,000	700	7D, 6.5D, 5.5D
52HP-WT W/Bucket, Used	12,000	20	2,000	200	100	3D
3Ton Truck, 5Yr	25,000	10	10,000	3,700	260	2.5D
3Ton Truck, 15Yrs	10,000	10	2,000	2,500	210	3D
3/4 Ton Pickup, New	25,000	7	6,500	1,500	500	3G
4WD ATV, New	5,000	10	1,000	150	150	1G
22' Combine, 5Yr	75,000	15	11,250	8,500	250	6.5D
16' Chisel, 5Yr	7,500	10	1,000	1,000	150	
35' Cultivator w/Harrow, New	20,000	15	3,000	1,000	200	
36' Cultiweeder, 3Yr	15,000	15	2,250	1,250	150	
30' Disk Drill, New	30,000	10	6,000	1,400	150	

TABLE 11. HOURLY MACHINERY COSTS

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL DEPRECIATION	INTEREST	INSURANCE	TAXES	HOUSING	TOTAL COST PER HOUR			TOTAL VARIABLE COST	TOTAL COST	
								FIXED COST	REPAIR	FUEL AND LUBE			
	\$												
185HP-CT, 15YR	57,000.00	20	700	3.66	4.70	.27	.81	.45	9.89	14.29	8.05	22.34	32.23
52HP-WT W/BUCKET	12,000.00	20	100	5.00	7.35	.42	1.26	.70	14.73	2.00	3.45	5.45	20.18
3TON TRUCK, 5YR	25,000.00	10	260	5.77	7.07	.40	1.21	.67	15.13	14.23	2.88	17.11	32.23
3TON TRUCK, 15YR	10,000.00	10	210	3.81	3.00	.17	.51	.29	7.78	11.90	3.45	15.35	23.14
3/4 TON PICKUP	25,000.00	7	500	5.29	3.31	.19	.57	.32	9.66	3.00	4.14	7.14	16.80
4WD ATV	5,000.00	10	150	2.67	2.10	.12	.36	.20	5.45	1.00	1.38	2.38	7.83
22' COMBINE, 5YR	75,000.00	15	250	17.00	18.11	1.04	3.11	1.73	40.98	34.00	7.48	41.48	82.45
16' CHISEL, 5YR	7,500.00	10	150	4.33	2.98	.17	.51	.28	8.27	6.67	.00	6.67	14.94
35' CULT W/HARROW	20,000.00	15	200	5.67	6.04	.35	1.04	.58	13.66	5.00	.00	5.00	18.66
36' CULTIWD, 3YR	15,000.00	15	150	5.67	6.04	.35	1.04	.58	13.66	8.33	.00	8.33	21.99
30' DISK DRILL	30,000.00	10	150	16.00	12.60	.72	2.16	1.20	32.68	9.33	.00	9.33	42.01

\*Shown using 7 gallons of diesel fuel. Using 6.5 gallons and 5 gallons of diesel fuel, the costs are \$7.48 and \$5.75, respectively.

TABLE 12. PRICES OF SELECTED INPUTS, COLUMBIA COUNTY, WASHINGTON.

ITEM	UNIT	PRICE/UNIT
		\$
<b>Fuel:</b>		
Gasoline	Gallon	1.20
Diesel	Gallon	1.00
<b>Fertilizer:</b>		
Nitrogen (Full Service)	Pound	.315
Sulfur (Full Service)	Pound	.48
Phosphate (Full Service)	Pound	.45
<b>Chemicals:</b>		
Roundup	Quart	11.97
Landmaster	Ounce	.18
Ammonium Sulfate	Pound	.13
Dimetoate	Quart	8.74
MCPA	Pint	2.29
Hoelon	Quart	19.66
Spring Herbicide	Acre	15.00
<b>Seed:</b>		
Wheat	Pound	.12
Barley	Pound	.135
<b>Rental and Custom Rates:</b>		
Herbicide Applicator	Acre	1.50
Aerial Application	Acre	4.50
<b>Other:</b>		
Labor	Hour	12.00
Burn Permit and Labor	Acre	1.00

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is violation of law to disregard label directions . If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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