

2006 Summer Fallow – Wheat Enterprise Budgets 13 – to 15 – Inch Rainfall Area Garfield County, Washington

By

Herbert Hinman, Emily Ruchert and David Bragg

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Note

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

- Capital, labor, and management resources
- Type and size of machinery implement
- Cultural practices
- Size of farm enterprise
- Crop yields
- Input prices
- Commodity prices

Costs can also be calculated differently depending on the intended use of the cost estimate. The information in this publication serves as a general guide for a modern, well-managed grain farm in Garfield County. To avoid drawing unwarranted conclusions about any particular farm or group of farms, the reader must closely examine the assumptions used. If they are not appropriate for the situation at hand, adjustments in the costs and/or returns should be made.

Contents

INTRODUCTION.....	1
BUDGET ASSUMPTIONS	2
SUMMARY OF RESULTS	3
DISCUSSION OF BUDGET INFORMATION	3
CONCLUDING NOTE	8
APPENDIX I: CHEMICAL FALLOW/DIRECT SEED SYSTEM: SUMMER FALLOW/WINTER WHEAT	10-17
APPENDIX II: CHEMICAL FALLOW/DIRECT SEED SYSTEM: SUMMER FALLOW/CLEARFIELD WHEAT	18-25
APPENDIX III: CONVENTIONAL TILLAGE SYSTEM: SUMMER FALLOW/WINTER WHEAT	26-33
APPENDIX IV: EXCEL SPREADSHEETS	34-37

2006 Summer Fallow – Wheat Enterprise Budgets Garfield County, Washington

Herbert Hinman, Emily Ruchert, David Bragg¹

INTRODUCTION

This publication presents projected costs and returns for summer fallow – winter wheat rotations in the 13- to 15-inch rainfall areas of Garfield County, Washington. 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 in resolving other business management problems.

The enterprise data does not represent a particular farm. Instead, it represents costs and returns under the specific assumptions adopted for the study. Excel spreadsheets are provided as a supplement to this publication that the user may use to modify the given budgets to better fit their own situation. Users may also use the blanks provided on the right-hand side of these budgets to estimate their own costs and returns. Also, the local Extension agent and other field persons are available to answer questions and/or provide recommendations on field operations and operating inputs.

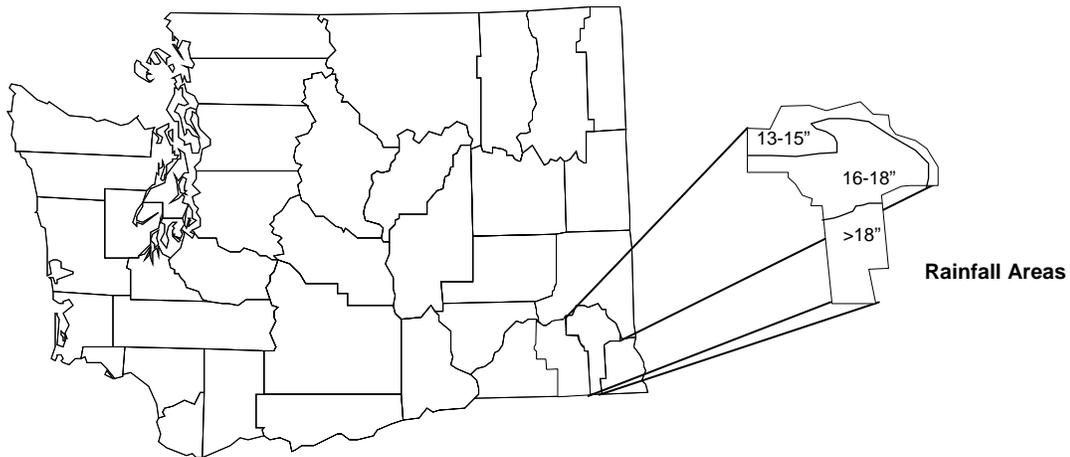


Figure 1. Garfield County, Washington

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SOURCES OF INFORMATION

A committee of experienced Garfield County wheat growers assembled at the request of the county agent. They identified the machinery implement, field operations, and inputs commonly used on well-managed operations. Local farm suppliers were contacted to supply current price information on materials and services commonly used. Machinery costs were based on replacement prices and on rates of use typical for a 1,400-acre farm.

BUDGET ASSUMPTIONS

The following assumptions were made in developing the data:

1. The representative farm includes 1,400 acres with 700 acres in winter wheat and 700 acres in fallow.
2. Wheat yield is assumed to be 60 bushels per acre. However, yields are variable in Garfield County and variable yields can have a substantial impact on break-even costs or prices.
3. The assumed price for wheat is \$3.40 per bushel.
4. Machinery is valued at costs incurred if the item were to be replaced. Machine items on farms of the representative size in Garfield 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 understates 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 replaceable cost basis.
5. Twenty-five percent of the pickup and truck use is allocated to other uses.
6. The prevailing interest rate is 8.5%.
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. Where such factors as farm size, machinery implement and use, cultural practices, and yield differ from those assumed in this publication, quite different enterprise costs and returns may result. This budget only examines production costs; marketing costs, including storage, handling, and associated interest rates are excluded from this analysis.

SUMMARY OF RESULTS

Grain produced in the low rainfall areas of Garfield County are typically produced under a two-year rotation. On the following three pages, Table 1 presents a summary of summer fallow and production costs for soft white winter wheat grown under a chemical fallow/direct seed system, Table 2 presents a summary of summer fallow and production costs for Clearfield wheat grown under a chemical fallow/direct seed system. Clearfield wheat is a newly developed herbicide-tolerant wheat which allows for cleaner wheat because of the ability of Beyond herbicide to control previously uncontrolled, or difficult-to-control, weeds such as jointed goatgrass, brome species and feral (or cereal) rye. Table 3 presents a summary of summer fallow and soft white winter wheat grown under a conventional tillage system. Attached to the bottom of each table are break-even prices for different levels of production.

DISCUSSION OF BUDGET INFORMATION

The budget information for the summer fallow/winter wheat enterprises is reported in Appendices I – III in seven separate tables for each 2-year rotation and production system evaluated in this study.

Tables 4 and 6: Schedule of Operations and Costs per Acre

Tables 4 and 6 outline the schedule of field operations by calendar month, the type of machinery used, and the hours used per acre for fallow after winter wheat and winter wheat after fallow, 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, insurance, and housing. These costs do not vary with the crops produced, given the ownership of a specific machinery implement, and are incurred whether or not a crop is grown.

Machinery fixed costs for a specific field operation are determined by multiplying the machine hours per acre times the per-hour fixed cost (Table 9). The per-hour fixed costs are determined by dividing the total fixed cost by the annual hours of machinery use for the representative farm.

Land fixed costs include taxes and net rent, which is based on rental agreements typical for the area minus expenditures typically covered by the landlord. The typical lease agreement is one-third landlord and two-thirds tenant crop share, with the landlord paying land taxes, one-third the crop insurance, and one-third fertilizer and chemical costs (with the exception of Roundup and Ultra Pro). The tenant covers all other production expenses. Roundup and Ultra Pro costs are not shared by the landowner as their application is seen as a substitution for a tillage operation for which the tenant is 100% responsible.

Table 1. Summary of Cost per Acre for Summer Fallow/Winter Wheat Rotation Using a Chemical Fallow/Direct Seed System in the 13- to 15-Inch Rainfall Area of Garfield County, Washington.

	Summer Fallow	Winter Wheat	Total Cost
Variable Costs			
Shared Fertilizer Costs	37.92		37.92
Shared Chemical Costs	1.26	19.77	21.03
Roundup	15.61		15.61
Ultra Pro	4.38		4.38
Shredder Rental	10.00		10.00
Sprayer Rental	3.00	1.33	4.33
Wheat Seed	12.00		12.00
Crop Insurance		7.00	7.00
Machinery Repairs	4.85	4.89	9.74
Machinery Fuel and Lube	7.36	6.30	13.66
Labor	9.86	9.67	19.53
Overhead	5.41	2.53	7.94
Interest	1.98	1.62	3.60
	-----	-----	-----
Total Variable Cost	113.63	53.11	166.75
Fixed Costs			
Machinery Cost*	20.73	11.65	22.37
Land Taxes	3.25	3.25	6.50
Interest on Sum. Fal. Cost**		11.70	11.70
Land Cost***		37.85	37.85
	-----	-----	-----
Total Fixed Cost	23.98	64.45	88.42
Total Cost	137.61	117.56	255.17

*Includes depreciation, interest, insurance, taxes, and housing for tractors and machinery.

**8.5% interest

*** $((\text{Production} \times \text{Price})/3 - \text{Land Taxes} - 1/3 \text{ Shared Fertilizer Costs} - 1/3 \text{ Shared Chemical Costs} - 1/3 \text{ Crop Insurance} - 1/3 \text{ Interest on Shared Summer Fallow Fertilizer and Chemical Costs})$. (Production Level = 60 bu/acre, Price = \$3.40/bu)

Break-Even Prices

<u>Production Level</u>	<u>B-E Price/ Bushel</u>	<u>Production Level</u>	<u>B-E Price/ Bushel</u>
50 bu/acre	5.61	75 bu/acre	3.74
55 bu/acre	5.10	80 bu/acre	3.51
60 bu/acre	4.68	85 bu/acre	3.30
65 bu/acre	4.32	90 bu/acre	3.12
70 bu/acre	4.01		

Table 2. Summary of Cost per Acre for Summer Fallow/Clearfield Wheat Rotation Using a Chemical Fallow/Direct Seed System in the 13- to 15-Inch Rainfall Area of Garfield County, Washington.

	Summer Fallow	Winter Wheat	Total Cost
Variable Costs			
Shared Fertilizer Costs	37.92		37.92
Shared Chemical Costs	1.26	25.50	26.76
Roundup	15.61		15.61
Ultra Pro	4.38		4.38
Shredder Rental	10.00		10.00
Sprayer Rental	3.00	1.00	4.00
101 Wheat Seed	16.00		16.00
Crop Insurance		7.00	7.00
Machinery Repairs	4.85	4.73	9.58
Machinery Fuel and Lube	7.36	6.08	13.44
Labor	9.86	9.33	19.19
Overhead	5.61	2.75	8.36
Interest	1.98	1.43	3.41
	-----	-----	-----
Total Variable Cost	117.83	57.82	175.65
Fixed Costs			
Machinery Cost*	20.73	11.04	31.77
Land Taxes	3.25	3.25	6.50
Interest on Sum. Fal. Cost**		12.05	12.05
Land Cost***		35.77	35.77
	-----	-----	-----
Total Fixed Cost	23.98	62.11	86.09
Total Cost	141.81	119.93	261.74

*Includes depreciation, interest, insurance, taxes, and housing for tractors and machinery.

**8.5% interest

*** $((\text{Production} \times \text{Price})/3) - \text{Land Taxes} - 1/3 \text{ Shared Fertilizer Costs} - 1/3 \text{ Shared Chemical Costs} - 1/3 \text{ Crop Insurance} - 1/3 \text{ Interest on Shared Summer Fallow Fertilizer and Chemical Costs. (Production Level} = 60 \text{ bu/acre, Price} = \$3.40/\text{bu})$

Break-Even Prices

<u>Production Level</u>	<u>B-E Price/ Bushel</u>	<u>Production Level</u>	<u>B-E Price/ Bushel</u>
50 bu/acre	5.81	75 bu/acre	3.87
55 bu/acre	5.28	80 bu/acre	3.63
60 bu/acre	4.84	85 bu/acre	3.42
65 bu/acre	4.47	90 bu/acre	3.23
70 bu/acre	4.15		

Table 3. Summary of Cost per Acre for Summer Fallow/Winter Wheat Rotation Using a Conventional Tillage System in the 13- to 15-Inch Rainfall Area of Garfield County, Washington.

	Summer Fallow	Winter Wheat	Total Cost
Variable Costs			
Shared Fertilizer Costs	40.00		40.00
Shared Chemical Costs		15.24	15.24
Fertilizer Applicator	1.00		1.00
Sprayer Rental		1.00	1.00
Wheat Seed	10.50		10.50
Crop Insurance		7.00	7.00
Machinery Repairs	14.58	4.83	19.41
Machinery Fuel and Lube	20.25	6.08	26.33
Labor	19.65	9.33	28.98
Overhead	5.38	2.23	7.61
Interest	1.59	1.07	2.66
	-----	-----	-----
Total Variable Cost	112.95	46.78	159.73
Fixed Costs			
Machinery Cost*	35.26	10.50	45.76
Land Taxes	3.25	3.25	6.50
Interest on Sum. Fal. Cost**		12.87	12.87
Land Cost***		39.19	39.19
	-----	-----	-----
Total Fixed Cost	38.51	65.81	104.32
Total Cost	151.46	112.59	264.05

*Includes depreciation, interest, insurance, taxes, and housing for tractors and machinery.

**8.5% interest

*** $(\text{Production} \times \text{Price})/3 - \text{Land Taxes} - 1/3 \text{ Shared Fertilizer Costs} - 1/3 \text{ Shared Chemical Costs} - 1/3 \text{ Crop Insurance} - 1/3 \text{ Interest on Shared Summer Fallow Fertilizer and Chemical Costs. (Production Level} = 60 \text{ bu/acre, Price} = \$3.40/\text{bu})$

Break-Even Prices

<u>Production Level</u>	<u>B-E Price/ Bushel</u>	<u>Production Level</u>	<u>B-E Price/ Bushel</u>
50 bu/acre	5.88	75 bu/acre	3.92
55 bu/acre	5.35	80 bu/acre	3.68
60 bu/acre	4.90	85 bu/acre	3.46
65 bu/acre	4.52	90 bu/acre	3.27
70 bu/acre	4.20		

While the owner-operator obviously will not actually experience a land rental cost, this cost represents the minimum returns the owner-operator must have to justify growing this crop on the land. This net rent return represents the income the owner-operator forgoes by producing this crop rather than renting to a tenant who produces the crop. As a result of owning land, the owner-operator receives both current returns from their farming operation and any long-term appreciation in land value. However, the owner-operator would continue to receive land value appreciation even if the land was rented to a tenant. Consequently, the appropriate land charge for growing the crop is the net rent lost by the owner-operator. 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 forgone 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 those forgone 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.

In Table 6, 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 returns 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.

At the bottom of Tables 4 and 6, listed by operation, are the services and/or materials used, the quantities used, and the prices paid for the services and/or materials making up each dollar amount listed in the "Service" and "Materials" columns of the respective tables.

Tables 5 and 7: Summary of Production Cost per Acre

Tables 5 and 7 itemize the costs appearing in the "Schedule of Operations and Costs per Acre" for summer fallow and winter wheat, respectively. Most of the items are self-explanatory or have been previously explained. One entry, "Interest on Machinery," warrants additional explanation.

Machinery interest cost is calculated on the average annual investment in the machinery. The formula used to calculate the average machinery investment is:

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

The 8.5% interest charge made against this average investment represents an opportunity cost (returns foregone by investing in the given machine implement rather than in alternative investments) or interest paid on money borrowed to finance machine

purchases, or both. Machinery interest cost for one acre of summer fallow or winter wheat is determined by multiplying the respective machine hours per acre times the per hour interest costs (Table 9).

Table 8: Machinery Complement

Table 8 identifies the machine implements used to derive the budget. Typically, most pieces of machinery used on farms of the representative size in Garfield County are purchased used. Pickups are generally replaced new. Farmers will typically have a tractor that is replaced, when necessary, with an 8- to 10-year old used tractor. It is also typical to have two trucks. Table 8 presents the types of equipment used on the representative farm, their current replacement price, years of use before replacement, salvage value, annual repair cost, annual hours of use, and gallons of fuel used per hour of operation.

Table 9: Hourly Machinery Costs

Table 9 presents, based upon the information provided in Table 8, the hourly machinery cost of each machine implement used to derive the budget.

Table 10: Input Prices

Table 10 presents the prices for inputs used in developing the budget.

CONCLUDING NOTE

The results of this study show that given the assumptions used for this study, total “economic” cost of producing wheat under a fallow – wheat rotation are not being covered in any of the three production systems analyzed. Simply put, with input prices rising and output prices failing to increase, some major changes are going to have to take place if many producers are to stay in business. For producers that own their land and machinery debt free, the lack of land rental payments and principal and interest payments make it possible for many of these producers to survive by taking smaller returns from their investments and/or returns to their labor than desired. For those producers that lease much of their land and are paying principal and interest payments, wheat prices are going to have to increase substantially and/or rental arrangements are going to have to change if they are to have a chance to survive.

A couple aspects, that have not been analyzed in this study and are likely to have impacts in the future, are that if fuel and fertilizer input prices continue to increase, the use of chemical fallow as compared to conventional tillage will become more and more prevalent. In addition, the intervention of Clearfield wheat, while more expensive to produce on a per-acre basis than traditional soft white winter wheat, under a chemical fallow/winter wheat rotation, will become ever more popular if wheat yields per acre differ significantly in favor of Clearfield wheat.

Producers may look at the figures in these budgets and say that they produce for less than these cost figures show. This may be true for some producers. For the authors and producers who organized this data fully recognize that these budgets do not represent any particular operation and should be used as a general guide to help derive budgets for individual operations. Furthermore, users of these budgets must fully understand that these are “economic” budgets that include all opportunity costs for operator labor and equity invested. In addition, machinery costs are included on a “replacement cost” basis. To appropriately use these budgets, one needs to fully comprehend the procedures and assumptions used in this study and be able to interpret the results accordingly. Thus, to help readers more fully understand crop enterprise budgets developed by Washington State University, one may log on to the Internet at <http://www.farm-mgmt.wsu.edu/> and click on Publication Links, Unpublished and Understanding and Using WSU Crop Enterprise Budgets. This paper can be read directly from the screen or downloaded.

For those readers familiar with using spreadsheets, Excel spreadsheets similar to Tables 1, 2, and 3, shown in Appendix IV, can be downloaded and modified by users to reflect their situation. These spreadsheets can be downloaded from the Internet at <http://www.farm-mgmt.wsu.edu/> by clicking on Publication Links then on Non-Irrigated Crops.

This publication describes current production practices used in the production of wheat in Garfield County, Washington, under different two-year fallow – wheat production systems. The authors present this information based on data collected from active producers of wheat using two-year rotations. They are not recommending particular production practices. Each producer’s situation is unique so they will need to make their own decisions regarding production practices based on their own particular circumstances.

APPENDIX I

CHEMICAL FALLOW / DIRECT SEED SYSTEM:
SUMMER FALLOW / WINTER WHEAT

TABLE 4A. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SUMMER FALLOW AFTER WINTER WHEAT USING A CHEMICAL FALLOW/DIRECT SEED SYSTEM, 13- TO 15-INCH RAINFALL AREA, GARFIELD 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.		
						\$	\$	\$	\$	\$	\$	\$	
SHRED STRAW	300HP-WT, 26' RENTED SHREDDER	OCT	2005	.05	.06	1.89	1.47	.99	10.00	.00	.97	13.43	15.32
SPRAY1	300HP-WT, 70' RENTAL APPLICAT.	MAR	2006	.03	.04	1.26	.98	.72	1.00	6.52	.39	9.61	10.87
HAUL WATER	TRUCK & WATER TANK	MAR	2006	.01	.02	.55	.15	.30	.00	.00	.02	.47	1.02
SPRAY2	300HP-WT, 70' RENTAL APPLICAT.	MAY	2006	.03	.04	1.26	.98	.72	1.00	6.52	.26	9.48	10.74
HAUL WATER	TRUCK & WATER TANK	MAY	2006	.01	.02	.55	.15	.30	.00	.00	.01	.46	1.01
SPRAY3	300HP-WT, 70' RENTAL APPLICAT.	AUG	2006	.03	.04	1.26	.98	.72	1.00	8.21	.08	10.98	12.24
HAUL WATER	TRUCK & WATER TANK	AUG	2006	.01	.02	.55	.15	.30	.00	.00	.00	.45	1.00
DIRECT SEED/FERT	300HP-WT, 30' DIRECT SEED DRIL	SEP	2006	.10	.12	11.25	4.91	2.16	.00	49.92	.00	56.99	68.24
HAUL SEED/FERT	TRUCK	SEP	2006	.01	.02	.55	.15	.30	.00	.00	.00	.45	1.00
MACHINE TRANSPT.	SEMI-TRUCK	ANN	2006	.02	.02	.16	.39	.40	.00	.00	.03	.82	.99
PICKUP	3/4 TON PICKUP	ANN	2006	.15	.17	1.44	1.92	2.97	.00	.00	.21	5.10	6.54
OVERHEAD	UTILITIES, LEGAL, ACCT., ETC.	ANN	2006	.00	.00	.00	.00	.00	5.39	.00	.00	5.39	5.39
TAXES	LAND	ANN	2006	.00	.00	3.25	.00	.00	.00	.00	.00	.00	3.25
TOTAL PER ACRE				.48	.55	23.98	12.22	9.86	18.41	71.17	1.98	113.63	137.61

*ASSUMES 1,400 ACRES WITH 700 ACRES IN WINTER WHEAT AND 700 ACRES IN SUMMER FALLOW, ANNUALLY.

SPRAY1: APPLICATOR @ \$1.00/ACRE, 22 OZ. ROUNDUP @ 21.09¢/OZ., 3.2 OZ. EXCEL 90 @ 13.125¢/OZ., 50 OZ. ULTRA PRO @ 2.92¢/OZ.

SPRAY2: APPLICATOR @ \$1.00/ACRE, 22 OZ. ROUNDUP @ 21.09¢/OZ., 3.2 OZ. EXCEL 90 @ 13.125¢/OZ., 50 OZ. ULTRA PRO @ 2.92¢/OZ.

SPRAY3: APPLICATOR @ \$1.00/ACRE, 30 OZ. ROUNDUP @ 21.09¢/OZ., 3.2 OZ. EXCEL 90 @ 13.125¢/OZ., 50 OZ. ULTRA PRO @ 2.92¢/OZ.

DIRECT SEED/FERTILIZE: 80 LBS. WHEAT SEED @ 15¢/LB., 50 LBS. NITROGEN @ 49¢/LB., 18 LBS. PHOSPHOROUS @ 45¢/LB., 14 LBS. SULFUR @ 38¢/LB.

TABLE 5A. ITEMIZED COST PER ACRE FOR SUMMER FALLOW AFTER WINTER WHEAT USING A CHEMICAL FALLOW/DIRECT SEED SYSTEM 13- TO 15-INCH RAINFALL AREA, GARFIELD COUNTY, WASHINGTON.*

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
SHREDDER RENTAL	ACRE	10.00	1.00	10.00	_____
SPRAYER RENTAL	ACRE	1.00	3.00	3.00	_____
ROUNDUP	OZ.	.21	74.00	15.61	_____
EXCEL 90	OZ.	.13	9.60	1.26	_____
ULTRA PRO	OZ.	.03	150.00	4.38	_____
WHEAT SEED	LB.	.15	80.00	12.00	_____
NITROGEN	LB.	.49	50.00	24.50	_____
PHOSPHOROUS	LB.	.45	18.00	8.10	_____
SULFUR	LB.	.38	14.00	5.32	_____
MACHINERY REPAIRS	ACRE	4.85	1.00	4.85	_____
MACHINE FUEL/LUBE	ACRE	7.36	1.00	7.36	_____
LABOR (TRAC/MACH)	HOURL	18.00	.55	9.86	_____
OVERHEAD	ACRE	5.41	1.00	5.41	_____
INTEREST ON OP. CAP.	ACRE	1.98	1.00	1.98	_____

TOTAL VARIABLE COST				113.63	_____
FIXED COSTS		\$		\$	
MACHINE DEPRECIATION	ACRE	10.97	1.00	10.97	_____
MACHINE INTEREST**	ACRE	6.98	1.00	6.98	_____
MACHINE INSURANCE	ACRE	.49	1.00	.49	_____
MACHINE TAXES	ACRE	1.47	1.00	1.47	_____
MACHINE HOUSING	ACRE	.82	1.00	.82	_____
LAND TAXES	ACRE	3.25	1.00	3.25	_____

TOTAL FIXED COST				23.98	_____
TOTAL COST				137.61	_____

*ASSUMES 1,400 ACRES WITH 700 ACRES IN WINTER WHEAT AND 700 ACRES IN SUMMER FALLOW, ANNUALLY.

**8.5% OPPORTUNITY COST ON THE AVERAGE VALUE OF MACHINERY INVESTMENT OVER THE USEFUL LIFE.

TABLE 6A. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR WINTER WHEAT AFTER SUMMER FALLOW USING A CHEMICAL FALLOW/DIRECT SEED SYSTEM 13- TO 15-INCH RAINFALL AREA, GARFIELD 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.		
						\$	\$	\$	\$	\$	\$	\$
SPRAY4 (1/3 AC.)	300HP-WT, 70' RENTED SPRAYER	NOV 2005	.01	.01	.42	.33	.24	.33	8.89	.69	10.48	10.90
HAUL WATER	TRUCK & WATER TANK	NOV 2005	.01	.01	.18	.05	.10	.00	.00	.01	.16	.34
SPRAY5	300HP-WT, 70' RENTAL APPLICAT.	APR 2006	.03	.04	1.26	.98	.72	1.00	10.87	.48	14.05	15.31
HAUL WATER	TRUCK & WATER TANK	APR 2006	.01	.02	.55	.15	.30	.00	.00	.02	.46	1.01
HARVEST	25' COMBINE	JUL 2006	.13	.14	6.60	4.91	2.47	.00	.00	.10	7.49	14.09
HAUL WHEAT	TWO SEMI-TRUCKS	JUL 2006	.13	.14	1.03	2.46	2.47	.00	.00	.07	5.00	6.03
LAND COST	NET LAND RENT	SEP 2006	.00	.00	37.85	.00	.00	.00	.00	.00	.00	37.85
INSURANCE PAYMT.	CROP INSURANCE	SEP 2006	.00	.00	.00	.00	.00	7.00	.00	.00	7.00	7.00
MACHINE TRANSPT.	SEMI-TRUCK	ANN 2006	.02	.02	.16	.39	.40	.00	.00	.03	.82	.99
PICKUP	3/4 TON PICKUP	ANN 2006	.15	.17	1.44	1.92	2.97	.00	.00	.21	5.10	6.54
OVERHEAD	UTILITIES, LEGAL, ACCT., ETC.	ANN 2006	.00	.00	.00	.00	.00	2.53	.00	.00	2.53	2.53
TAXES	LAND	ANN 2006	.00	.00	3.25	.00	.00	.00	.00	.00	.00	3.25
INVESTMENT	SUMMER FAL. COST PLUS INTEREST	ANN 2006	.00	.00	149.31	.00	.00	.00	.00	.00	.00	149.31
TOTAL PER ACRE			.48	.54	202.06	11.19	9.67	10.86	19.76	1.62	53.11	255.17

*ASSUMES 1,400 ACRES WITH 700 ACRES IN WINTER WHEAT AND 700 ACRES IN SUMMER FALLOW, ANNUALLY.

SPRAY4: 0.67 OZ. MAVERICK @ \$20.00/OZ. PER APPLIED ACRE. (APPLIED TO 1/3 OF THE ACRES.)

SPRAY5: APPLICATOR @ \$1.00/ACRE, .10 OZ. ALLY @ \$21.00/OZ., 8 OZ. 2,4-D @ 12.5¢/OZ., 1 PINT BRONATE @ \$7.25/PINT, 4 OZ. EXCEL 90 @ 13.125¢/OZ.

TABLE 7A. ITEMIZED COST PER ACRE FOR WINTER WHEAT AFTER SUMMER FALLOW USING A CHEMICAL FALLOW/DIRECT SEED SYSTEM 13- TO 15-INCH RAINFALL AREA, GARFIELD COUNTY, WASHINGTON.*

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
SPRAYER RENTAL	ACRE	1.00	1.33	1.33	_____
MAVERICK	OZ.	20.00	.44	8.89	_____
ALLY	OZ.	21.00	.10	2.10	_____
2,4-D	OZ.	.13	8.00	1.00	_____
BRONATE	PINT	7.25	1.00	7.25	_____
EXCEL 90	OZ.	.13	4.00	.53	_____
CROP INSURANCE	ACRE	7.00	1.00	7.00	_____
MACHINERY REPAIRS	ACRE	4.89	1.00	4.89	_____
MACHINE FUEL/LUBE	ACRE	6.30	1.00	6.30	_____
LABOR (TRAC/MACH)	HOUR	18.00	.54	9.67	_____
OVERHEAD	ACRE	2.53	1.00	2.53	_____
INTEREST ON OP. CAP.	ACRE	1.62	1.00	1.62	_____

TOTAL VARIABLE COST				53.11	_____
FIXED COSTS		\$		\$	
MACHINE DEPRECIATION	ACRE	6.21	1.00	6.21	_____
MACHINE INTEREST**	ACRE	3.89	1.00	3.89	_____
MACHINE INSURANCE	ACRE	.27	1.00	.27	_____
MACHINE TAXES	ACRE	.82	1.00	.82	_____
MACHINE HOUSING	ACRE	.46	1.00	.46	_____
LAND TAXES	ACRE	3.25	1.00	3.25	_____
SUMMER FALLOW COST***	ACRE	137.61	1.085	149.31	_____
LAND COST****	ACRE	37.85	1.00	37.85	_____

TOTAL FIXED COST				202.06	_____
TOTAL COST				255.17	_____

*ASSUMES 1,400 ACRES WITH 700 ACRES IN WINTER WHEAT AND 700 ACRES IN SUMMER FALLOW, ANNUALLY.

**8.5% OPPORTUNITY COST ON THE AVERAGE VALUE OF MACHINERY INVESTMENT OVER THE USEFUL LIFE.

***SUMMER FALLOW COST OF PREVIOUS YEAR PLUS 8.5% INTEREST.

****GROSS RENT (60 BU. X \$3.40)/3) - LAND TAXES - 1/3 SHARED FERTILIZER COSTS - 1/3 SHARED CHEMICAL COSTS - 1/3 CROP INSURANCE - 1/3 INTEREST ON SHARED SUMMER FALLOW FERTILIZER AND CHEMICAL COSTS.

TABLE 8A. MACHINERY COMPLEMENT FOR A CHEMICAL FALLOW/DIRECT SEED SYSTEM 13-
TO 15-INCH RAINFALL AREA, GARFIELD COUNTY, WASHINGTON.

MACHINE NAME	PURCHASE PRICE \$	YEARS OF USE	SALVAGE VALUE \$	ANNUAL REPAIR COST \$	ANNUAL HOURS OF USE	GALLONS OF FUEL USED PER HOUR
300HP-WT	50,000	10	10,000	2,000	200	8D, 11D
SEMI-TRUCK	15,000	20	0	2,000	200	4D
3/4 PICKUP	25,000	7	3,000	1,000	500	4G
TRUCK & WATER TANK	10,000	10	2000	300	50	3D
25' COMBINE	35,000	10	7,500	5,000	100	8D
30' DIRECT SEED DRILL	40,000	10	10,000	1,000	80	

TABLE 10A. PRICES OF INPUTS.

ITEM	UNIT	PRICE/UNIT
<u>FUEL</u>		
		\$
GASOLINE	GAL.	2.35
DIESEL	GAL.	2.10
<u>FERTILIZER</u>		
NITROGEN	LB.	0.49
PHOSPHOROUS	LB.	0.45
SULFUR	LB.	0.38
<u>CHEMICALS</u>		
ROUNDUP	OZ.	0.2109
EXCEL 90	OZ.	0.13125
ULTRA PRO	OZ.	0.0292
MAVERICK	OZ.	20.00
ALLY	OZ.	21.00
2,4-D	OZ.	0.125
BRONATE	PINT	7.25
<u>WHEAT SEED</u>	LB.	0.15
<u>RENTAL RATES</u>		
SHREDDER	ACRE	10.00
SPRAYER	ACRE	1.00
<u>CROP INSURANCE</u>	ACRE	7.00
<u>LABOR</u>	HOUR	18.00
<u>LAND TAXES</u>	ACRE	3.25

APPENDIX II

CHEMICAL FALLOW / DIRECT SEED SYSTEM:

SUMMER FALLOW / CLEARFIELD WHEAT

TABLE 4B. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SUMMER FALLOW AFTER CLEARFIELD WINTER WHEAT USING A CHEMICAL FALLOW/DIRECT SEED SYSTEM, 13- TO 15-INCH RAINFALL AREA, GARFIELD 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.		
						\$	\$	\$	\$	\$	\$	\$	
SHRED STRAW	300HP-WT, 26' RENTED SHREDDER	OCT	2005	.05	.06	1.89	1.47	.99	10.00	.00	.97	13.43	15.32
SPRAY1	300HP-WT, 70' RENTAL APPLICAT.	MAR	2006	.03	.04	1.26	.98	.72	1.00	6.52	.39	9.61	10.87
HAUL WATER	TRUCK & WATER TANK	MAR	2006	.01	.02	.55	.15	.30	.00	.00	.02	.47	1.02
SPRAY2	300HP-WT, 70' RENTAL APPLICAT.	MAY	2006	.03	.04	1.26	.98	.72	1.00	6.52	.26	9.48	10.74
HAUL WATER	TRUCK & WATER TANK	MAY	2006	.01	.02	.55	.15	.30	.00	.00	.01	.46	1.01
SPRAY3	300HP-WT, 70' RENTAL APPLICAT.	AUG	2006	.03	.04	1.26	.98	.72	1.00	8.21	.08	10.98	12.24
HAUL WATER	TRUCK & WATER TANK	AUG	2006	.01	.02	.55	.15	.30	.00	.00	.00	.45	1.00
DIRECT SEED/FERT	300HP-WT, 30' DIRECT SEED DRIL	SEP	2006	.10	.12	11.25	4.91	2.16	.00	53.92	.00	60.99	72.24
HAUL SEED/FERT	TRUCK	SEP	2006	.01	.02	.55	.15	.30	.00	.00	.00	.45	1.00
PICKUP	3/4 TON PICKUP	ANN	2006	.15	.17	1.44	1.92	2.97	.00	.00	.21	5.10	6.54
MACHINE TRANSPT.	SEMI-TRUCK	ANN	2006	.02	.02	.16	.39	.40	.00	.00	.03	.82	.99
OVERHEAD	UTILITIES, LEGAL, ACCT., ETC.	ANN	2006	.00	.00	.00	.00	.00	5.61	.00	.00	5.61	5.61
TAXES	LAND	ANN	2006	.00	.00	3.25	.00	.00	.00	.00	.00	.00	3.25
TOTAL PER ACRE				.48	.55	23.98	12.22	9.86	18.61	75.17	1.98	117.83	141.81

*ASSUMES 1,400 ACRES WITH 700 ACRES IN WINTER WHEAT AND 700 ACRES IN SUMMER FALLOW, ANNUALLY.

SPRAY1: APPLICATOR @ \$1.00/ACRE, 22 OZ. ROUNDUP @ 21.09¢/OZ., 3.2 OZ. EXCEL 90 @ 13.125¢/OZ., 50 OZ. ULTRA PRO @ 2.92¢/OZ.
 SPRAY2: APPLICATOR @ \$1.00/ACRE, 22 OZ. ROUNDUP @ 21.09¢/OZ., 3.2 OZ. EXCEL 90 @ 13.125¢/OZ., 50 OZ. ULTRA PRO @ 2.92¢/OZ.
 SPRAY3: APPLICATOR @ \$1.00/ACRE, 30 OZ. ROUNDUP @ 21.09¢/OZ., 3.2 OZ. EXCEL 90 @ 13.125¢/OZ., 50 OZ. ULTRA PRO @ 2.92¢/OZ.
 DIRECT SEED/FERTILIZE: 80 LBS. 101 WHEAT SEED @ 20¢/LB., 50 LBS. NITROGEN @ 49¢/LB., 18 LBS. PHOSPHOROUS @ 45¢/LB., 14 LBS. SULFUR @ 38¢/LB.

TABLE 5B. ITEMIZED COST PER ACRE FOR SUMMER FALLOW AFTER CLEARFIELD WINTER WHEAT USING A CHEMICAL FALLOW/DIRECT SEED SYSTEM 13- TO 15-INCH RAINFALL AREA, GARFIELD COUNTY, WASHINGTON.*

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
SHREDDER RENTAL	ACRE	10.00	1.00	10.00	_____
SPRAYER RENTAL	ACRE	1.00	3.00	3.00	_____
ROUNDUP	OZ.	.21	74.00	15.61	_____
EXCEL 90	OZ.	.13	9.60	1.26	_____
ULTRA PRO	OZ.	.03	150.00	4.38	_____
101 WHEAT SEED	LB.	.20	80.00	16.00	_____
NITROGEN	LB.	.49	50.00	24.50	_____
PHOSPHOROUS	LB.	.45	18.00	8.10	_____
SULFUR	LB.	.38	14.00	5.32	_____
MACHINERY REPAIRS	ACRE	4.85	1.00	4.85	_____
MACHINE FUEL/LUBE	ACRE	7.36	1.00	7.36	_____
LABOR (TRAC/MACH)	HOURL	18.00	.55	9.86	_____
OVERHEAD	ACRE	5.61	1.00	5.61	_____
INTEREST ON OP. CAP.	ACRE	1.98	1.00	1.98	_____

TOTAL VARIABLE COST				117.83	_____
FIXED COSTS		\$		\$	
MACHINE DEPRECIATION	ACRE	10.97	1.00	10.97	_____
MACHINE INTEREST**	ACRE	6.98	1.00	6.98	_____
MACHINE INSURANCE	ACRE	.49	1.00	.49	_____
MACHINE TAXES	ACRE	1.47	1.00	1.47	_____
MACHINE HOUSING	ACRE	.82	1.00	.82	_____
LAND TAXES	ACRE	3.25	1.00	3.25	_____

TOTAL FIXED COST				23.98	_____
TOTAL COST				141.81	_____

*ASSUMES 1,400 ACRES WITH 700 ACRES IN WINTER WHEAT AND 700 ACRES IN SUMMER FALLOW, ANNUALLY.

**8.5% OPPORTUNITY COST ON THE AVERAGE VALUE OF MACHINERY INVESTMENT OVER THE USEFUL LIFE.

TABLE 7B. ITEMIZED COST PER ACRE FOR CLEARFIELD WINTER WHEAT AFTER SUMMER FALLOW USING A CHEMICAL FALLOW/DIRECT SEED SYSTEM 13- TO 15-INCH RAINFALL AREA, GARFIELD COUNTY, WASHINGTON.*

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
SPRAYER RENTAL	ACRE	1.00	1.00	1.00	_____
BEYOND	OZ.	4.20	5.00	21.00	_____
BRONATE	OZ.	.45	10.00	4.50	_____
CROP INSURANCE	ACRE	7.00	1.00	7.00	_____
MACHINERY REPAIRS	ACRE	4.73	1.00	4.73	_____
MACHINE FUEL/LUBE	ACRE	6.08	1.00	6.08	_____
LABOR (TRAC/MACH)	HOUR	18.00	.52	9.33	_____
OVERHEAD	ACRE	2.75	1.00	2.75	_____
INTEREST ON OP. CAP.	ACRE	1.43	1.00	1.43	_____

TOTAL VARIABLE COST				57.82	_____
FIXED COSTS		\$		\$	
MACHINE DEPRECIATION	ACRE	5.89	1.00	5.89	_____
MACHINE INTEREST**	ACRE	3.68	1.00	3.68	_____
MACHINE INSURANCE	ACRE	.26	1.00	.26	_____
MACHINE TAXES	ACRE	.78	1.00	.78	_____
MACHINE HOUSING	ACRE	.43	1.00	.43	_____
LAND TAXES	ACRE	3.25	1.00	3.25	_____
SUMMER FALLOW COST***	ACRE	141.81	1.085	153.86	_____
LAND COST****	ACRE	35.77	1.00	35.77	_____

TOTAL FIXED COST				203.92	_____
TOTAL COST				261.74	_____

*ASSUMES 1,400 ACRES WITH 700 ACRES IN WINTER WHEAT AND 700 ACRES IN SUMMER FALLOW, ANNUALLY.

**8.5% OPPORTUNITY COST ON THE AVERAGE VALUE OF MACHINERY INVESTMENT OVER THE USEFUL LIFE.

***SUMMER FALLOW COST OF PREVIOUS YEAR PLUS 8.5% INTEREST.

****GROSS RENT (60 BU. X \$3.40)/3) - LAND TAXES - 1/3 SHARED FERTILIZER COSTS - 1/3 SHARED CHEMICAL COSTS - 1/3 CROP INSURANCE - 1/3 INTEREST ON SHARED SUMMER FALLOW FERTILIZER AND CHEMICAL COSTS.

TABLE 8B. MACHINERY COMPLEMENT FOR A CHEMICAL FALLOW/DIRECT SEED SYSTEM 13-
TO 15-INCH RAINFALL AREA, GARFIELD COUNTY, WASHINGTON.

MACHINE NAME	PURCHASE PRICE \$	YEARS OF USE	SALVAGE VALUE \$	ANNUAL REPAIR COST \$	ANNUAL HOURS OF USE	GALLONS OF FUEL USED PER HOUR
300HP-WT	50,000	10	10,000	2,000	200	8D, 11D
SEMI-TRUCK	15,000	20	0	2,000	200	4D
3/4 PICKUP	25,000	7	3,000	1,000	500	4G
TRUCK & WATER TANK	10,000	10	2000	300	50	3D
25' COMBINE	35,000	10	7,500	5,000	100	8D
30' DIRECT SEED DRILL	40,000	10	10,000	1,000	80	

TABLE 10B. PRICES OF INPUTS.

ITEM	UNIT	PRICE/UNIT
<u>FUEL</u>		
		\$
GASOLINE	GAL.	2.35
DIESEL	GAL.	2.10
<u>FERTILIZER</u>		
NITROGEN	LB.	0.49
PHOSPHOROUS	LB.	0.45
SULFUR	LB.	0.38
<u>CHEMICALS</u>		
ROUNDUP	OZ.	0.2109
EXCEL 90	OZ.	0.13125
ULTRA PRO	OZ.	0.0292
BEYOND	OZ.	4.20
BRONATE	OZ.	0.45
<u>101 WHEAT SEED</u>	LB.	0.20
<u>RENTAL RATES</u>		
SHREDDER	ACRE	10.00
SPRAYER	ACRE	1.00
<u>CROP INSURANCE</u>	ACRE	7.00
<u>LABOR</u>	HOUR	18.00
<u>LAND TAXES</u>	ACRE	3.25

APPENDIX III

CONVENTIONAL TILLAGE SYSTEM:
SUMMER FALLOW / WINTER WHEAT

TABLE 4C. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SUMMER FALLOW AFTER WINTER WHEAT USING A CONVENTIONAL TILLAGE SYSTEM, 13- TO 15-INCH RAINFALL AREA, GARFIELD 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.		
						\$	\$	\$	\$	\$	\$	\$	
DISK	300HP-WT, 27' OFFSET DISC	OCT	2005	.10	.12	6.09	4.37	2.07	.00	.00	.50	6.94	13.03
CHISEL PLOW	300HP-WT, 27' CHISEL PLOW	NOV	2005	.10	.11	6.09	4.85	1.98	.00	.00	.48	7.31	13.41
CULTI-HARROW	300HP-WT, 36' CULTI-HARROW	MAY	2006	.07	.07	4.06	2.91	1.32	.00	.00	.12	4.35	8.42
RODWEED/HARROW	300HP-WT, 36' RODWEED-HARROW	JUN	2006	.10	.11	2.83	3.78	1.98	.00	.00	.12	5.88	8.71
RODWEED/HARROW	300HP-WT, 36' RODWEED-HARROW	JUL	2006	.10	.11	2.83	3.78	1.98	.00	.00	.08	5.84	8.67
RODWEED/HARROW	300HP-WT, 36' RODWEED-HARROW	AUG	2006	.10	.11	2.83	3.78	1.98	.00	.00	.04	5.80	8.63
FERTILIZE	300HP-WT, 45' RENTAL APPLICAT.	SEP	2006	.05	.06	1.08	1.85	1.08	1.00	40.00	.00	43.93	45.01
HAUL FERTILIZER	TRUCK	SEP	2006	.01	.02	.55	.15	.30	.00	.00	.00	.45	1.00
RODWEED/HARROW	300HP-WT, 36' RODWEED-HARROW	SEP	2006	.10	.11	2.83	3.78	1.98	.00	.00	.00	5.76	8.59
SEED WHEAT	300HP-WT, 36' HOE DRILL	SEP	2006	.07	.07	3.89	3.14	1.32	.00	10.50	.00	14.95	18.84
HAUL SEED	TRUCK	SEP	2006	.01	.02	.55	.15	.30	.00	.00	.00	.45	1.00
MACHINE TRANSPT.	SEMI-TRUCK	ANN	2006	.02	.02	.16	.39	.40	.00	.00	.03	.82	.99
PICKUP	3/4 TON PICKUP	ANN	2006	.15	.17	1.44	1.92	2.97	.00	.00	.21	5.10	6.54
OVERHEAD	UTILITIES, LEGAL, ACCT., ETC.	ANN	2006	.00	.00	.00	.00	.00	5.38	.00	.00	5.38	5.38
TAXES	LAND	ANN	2006	.00	.00	3.25	.00	.00	.00	.00	.00	.00	3.25
TOTAL PER ACRE				.98	1.09	38.51	34.83	19.65	6.38	50.50	1.59	112.95	151.46

*ASSUMES 1,400 ACRES WITH 700 ACRES IN WINTER WHEAT AND 700 ACRES IN SUMMER FALLOW, ANNUALLY.

FERTILIZE: APPLICATOR @ \$1.00/ACRE, 70 LBS. NITROGEN @ 49¢/LB., 15 LBS. SULFUR @ 38¢/LB.
 SEED WHEAT: 70 LBS. WHEAT SEED @ 15¢/LB.

TABLE 5C. ITEMIZED COST PER ACRE FOR SUMMER FALLOW AFTER WINTER WHEAT USING A CONVENTIONAL TILLAGE SYSTEM, 13- TO 15-INCH RAINFALL AREA, GARFIELD COUNTY, WASHINGTON.*

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
FERTILIZER APPLICATOR	ACRE	1.00	1.00	1.00	_____
NITROGEN	LB.	.49	70.00	34.30	_____
SULFUR	LB.	.38	15.00	5.70	_____
WHEAT SEED	LB.	.15	70.00	10.50	_____
MACHINERY REPAIRS	ACRE	14.58	1.00	14.58	_____
MACHINE FUEL/LUBE	ACRE	20.25	1.00	20.25	_____
LABOR (TRAC/MACH)	HOURL	18.00	1.09	19.65	_____
OVERHEAD	ACRE	5.38	1.00	5.38	_____
INTEREST ON OP. CAP.	ACRE	1.59	1.00	1.59	_____

TOTAL VARIABLE COST				112.95	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	8.95	1.00	8.95	_____
TRACTOR INTEREST**	ACRE	5.71	1.00	5.71	_____
TRACTOR INSURANCE	ACRE	.40	1.00	.40	_____
TRACTOR TAXES	ACRE	1.21	1.00	1.21	_____
TRACTOR HOUSING	ACRE	.67	1.00	.67	_____
MACHINE DEPRECIATION	ACRE	18.56	1.00	18.56	_____
MACHINE INTEREST**	ACRE	11.93	1.00	11.93	_____
MACHINE INSURANCE	ACRE	.84	1.00	.84	_____
MACHINE TAXES	ACRE	2.53	1.00	2.53	_____
MACHINE HOUSING	ACRE	1.40	1.00	1.40	_____
LAND TAXES	ACRE	3.25	1.00	3.25	_____

TOTAL FIXED COST				38.51	_____
TOTAL COST				151.46	_____

*ASSUMES 1,400 ACRES WITH 700 ACRES IN WINTER WHEAT AND 700 ACRES IN SUMMER FALLOW, ANNUALLY.

**8.5% OPPORTUNITY COST ON THE AVERAGE VALUE OF MACHINERY INVESTMENT OVER THE USEFUL LIFE.

TABLE 6C. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR WINTER WHEAT AFTER SUMMER FALLOW USING A CONVENTIONAL TILLAGE SYSTEM, 13- TO 15-INCH RAINFALL AREA, GARFIELD 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.		
						\$	\$	\$	\$	\$	\$	\$	
SPRAY/FERTILIZE	300HP-WT, 70' RENTAL APPLICAT.	APR	2006	.03	.04	.72	1.07	.72	1.00	15.23	.63	18.66	19.38
HAUL WATER	TRUCK & WATER TANK	APR	2006	.01	.02	.55	.15	.30	.00	.00	.02	.46	1.01
HARVEST	25' COMBINE	JUL	2006	.13	.14	6.60	4.91	2.47	.00	.00	.10	7.49	14.09
HAUL	TWO SEMI-TRUCKS	JUL	2006	.13	.14	1.03	2.46	2.47	.00	.00	.07	5.00	6.03
LAND COST	NET LAND RENT	SEP	2006	.00	.00	39.19	.00	.00	.00	.00	.00	.00	39.19
INSURANCE PAYMT.	CROP INSURANCE	SEP	2006	.00	.00	.00	.00	.00	7.00	.00	.00	7.00	7.00
MACHINE TRANSPT.	SEMI-TRUCK	ANN	2006	.02	.02	.16	.39	.40	.00	.00	.03	.82	.99
PICKUP	3/4 TON PICKUP	ANN	2006	.15	.17	1.44	1.92	2.97	.00	.00	.21	5.10	6.54
OVERHEAD	UTILITIES, LEGAL, ACCT., ETC.	ANN	2006	.00	.00	.00	.00	.00	2.23	.00	.00	2.23	2.23
TAXES	LAND	ANN	2006	.00	.00	3.25	.00	.00	.00	.00	.00	.00	3.25
INVESTMENT	SUMMER FAL. COST PLUS INTEREST	ANN	2006	.00	.00	164.33	.00	.00	.00	.00	.00	.00	164.33
TOTAL PER ACRE				.47	.52	217.28	10.91	9.33	10.23	15.23	1.07	46.78	264.05

*ASSUMES 1,400 ACRES WITH 700 ACRES IN WINTER WHEAT AND 700 ACRES IN SUMMER FALLOW, ANNUALLY.

SPRAY/FERTILIZE: APPLICATOR @ \$1.00/ACRE, .10 OZ. ALLY @ \$21.00/OZ., 8 OZ. 2,4-D @ 12.5¢/OZ., 1 PINT BRONATE @ \$7.25/PINT, 4 OZ. EXCEL 90 @ 13.125¢/OZ., 2 GALLONS SOLUTION 32 @ \$2.18/GAL.

TABLE 7C. ITEMIZED COST PER ACRE FOR WINTER WHEAT AFTER SUMMER FALLOW USING A CONVENTIONAL TILLAGE SYSTEM, 13- TO 15-INCH RAINFALL AREA, GARFIELD COUNTY, WASHINGTON.*

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM

VARIABLE COSTS		\$		\$	
SPRAYER RENTAL	ACRE	1.00	1.00	1.00	_____
ALLY	OZ.	21.00	.10	2.10	_____
2,4-D	OZ.	.13	8.00	1.00	_____
BRONATE	PINT	7.25	1.00	7.25	_____
EXCEL 90	OZ.	.13	4.00	.53	_____
SOLUTION 32	GAL.	2.18	2.00	4.36	_____
CROP INSURANCE	ACRE	7.00	1.00	7.00	_____
MACHINERY REPAIRS	ACRE	4.83	1.00	4.83	_____
MACHINE FUEL/LUBE	ACRE	6.08	1.00	6.08	_____
LABOR (TRAC/MACH)	HOUR	18.00	.52	9.33	_____
OVERHEAD	ACRE	2.23	1.00	2.23	_____
INTEREST ON OP. CAP.	ACRE	1.07	1.00	1.07	_____

TOTAL VARIABLE COST				46.78	_____
FIXED COSTS		\$		\$	
MACHINE DEPRECIATION	ACRE	5.60	1.00	5.60	_____
MACHINE INTEREST**	ACRE	3.50	1.00	3.50	_____
MACHINE INSURANCE	ACRE	.25	1.00	.25	_____
MACHINE TAXES	ACRE	.74	1.00	.74	_____
MACHINE HOUSING	ACRE	.41	1.00	.41	_____
LAND TAXES	ACRE	3.25	1.00	3.25	_____
SUM FAL COST	ACRE	151.46	1.08	164.33	_____
LAND COST	ACRE	39.19	1.00	39.19	_____

TOTAL FIXED COST				217.28	_____
TOTAL COST				264.05	_____

*ASSUMES 1,400 ACRES WITH 700 ACRES IN WINTER WHEAT AND 700 ACRES IN SUMMER FALLOW, ANNUALLY.

**8.5% OPPORTUNITY COST ON THE AVERAGE VALUE OF MACHINERY INVESTMENT OVER THE USEFUL LIFE.

***SUMMER FALLOW COST OF PREVIOUS YEAR PLUS 8.5% INTEREST.

****GROSS RENT (60 BU. X \$3.40)/3) - LAND TAXES - 1/3 SHARED FERTILIZER COSTS - 1/3 SHARED CHEMICAL COSTS - 1/3 CROP INSURANCE - 1/3 INTEREST ON SHARED SUMMER FALLOW FERTILIZER AND CHEMICAL COSTS.

TABLE 8C. MACHINERY COMPLEMENT FOR A SUMMER FALLOW/WINTER WHEAT CONVENTIONAL TILLAGE SYSTEM IN THE 13- TO 15-INCH RAINFALL AREA, GARFIELD COUNTY, WASHINGTON.

MACHINE NAME	PURCHASE PRICE \$	YEARS OF USE	SALVAGE VALUE \$	ANNUAL REPAIR COST \$	ANNUAL HOURS OF USE	GALLONS OF FUEL USED PER HOUR
300HP-WT	50,000	10	10,000	4,500	350	8D, 9D, 10D, 12D
SEMI-TRUCK	15,000	20	0	2,000	200	4D
3/4 PICKUP	25,000	7	3,000	1,000	500	4G
TRUCK & WATER TANK	10,000	10	2000	300	50	3D
25' COMBINE	35,000	10	7,500	5,000	100	8D
36' HOE DRILL	12,000	10	2,000	500	50	
27' CHISEL PLOW	20,000	10	6,000	500	75	
27' OFFSET DISK	20,000	10	6,000	500	75	
36' CULTI-HARROW	20,000	10	6,000	500	75	
36' RODWEED/HARROW	8,000	10	0	600	190	

TABLE 9C: HOURLY MACHINERY COSTS FOR A SUMMER FALLOW/WINTER WHEAT CONVENTIONAL TILLAGE SYSTEM IN THE 13- TO 15-INCH RAINFALL AREA, GARFIELD COUNTY, WASHINGTON.

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL DEPRECIATION	INTEREST EST	INSURANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST	
	\$												
								-----COST PER HOUR-----					
300HP-WT*	50,000.00	10	350	11.43	7.29	.51	1.54	.86	21.63	12.86	19.32	32.18	53.81
SEMI-TRUCK	15,000.00	20	200	3.75	3.19	.23	.68	.38	8.21	10.00	9.66	19.66	27.87
3/4 TON PICKUP	25,000.00	7	500	6.29	2.38	.17	.50	.28	9.62	2.00	10.81	12.81	22.43
TRUCK & WATER TANK	10,000.00	10	50	16.00	10.20	.72	2.16	1.20	30.28	6.00	7.25	13.25	43.53
25' COMBINE	35,000.00	10	100	27.50	18.06	1.28	3.83	2.13	52.79	20.00	19.32	39.32	92.11
36' HOE DRILL	12,000.00	10	50	20.00	11.90	.84	2.52	1.40	36.66	10.00	.00	10.00	46.66
27' CHISEL PLOW	20,000.00	10	75	18.67	14.73	1.04	3.12	1.73	39.29	6.67	.00	6.67	45.96
27' OFFSET DISC	20,000.00	10	75	18.67	14.73	1.04	3.12	1.73	39.29	6.67	.00	6.67	45.96
36' CULTI-HARROW	20,000.00	10	75	18.67	14.73	1.04	3.12	1.73	39.29	6.67	.00	6.67	45.96
36' RODWD-HARROW	8,000.00	10	190	4.21	1.79	.13	.38	.21	6.72	3.16	.00	3.16	9.87

*SHOWN USING 8 GAL. OF DIESEL PER HOUR. USING 9 GAL. OF DIESEL PER HOUR THE FUEL AND LUBE COST IS \$21.74, THE TOTAL VARIABLE COST IS \$34.59, AND THE TOTAL COST IS \$56.22. USING 10 GAL. OF DIESEL PER HOUR THE FUEL AND LUBE COST IS \$24.15, THE TOTAL VARIABLE COST IS \$37.01, AND THE TOTAL COST IS \$58.64. USING 12 GAL. OF DIESEL PER HOUR THE FUEL AND LUBE COST IS \$28.98, THE TOTAL VARIABLE COST IS \$41.84, AND THE TOTAL COST IS \$63.47.

TABLE 10C. PRICES OF INPUTS

ITEM	UNIT	PRICE/UNIT
<u>FUEL</u>		
		\$
GASOLINE	GAL.	2.35
DIESEL	GAL.	2.10
<u>FERTILIZER</u>		
NITROGEN	LB.	0.49
PHOSPHOROUS	LB.	0.45
SULFUR	LB.	0.38
<u>CHEMICALS</u>		
ROUNDUP	OZ.	0.2109
EXCEL 90	OZ.	0.13125
ULTRA PRO	OZ.	0.0292
MAVERICK	OZ.	20.00
ALLY	OZ.	21.00
2,4-D	OZ.	0.125
BRONATE	PINT	7.25
<u>WHEAT SEED</u>	LB.	0.15
<u>SPRAYER RENTAL RATE</u>	ACRE	1.00
<u>CROP INSURANCE</u>	ACRE	7.00
<u>LABOR</u>	HOUR	18.00
<u>LAND TAXES</u>	ACRE	3.25

APPENDIX IV

Excel Spreadsheets

The attached Excel workbook can be downloaded from the Internet at <http://www.farm-mgmt.wsu.edu/> and clicking on Publication Links then on Non-irrigated Crops. The spreadsheets in this workbook can easily be modified by the user to fit a particular situation. Cells with a blue background are protected cells. Cells with a yellow background are unprotected. If the user desires to change a protected cell, simply click on Tools/Protection and unprotect the spreadsheet (there is not a password) and make the changes. It is highly recommended that once the original workbook is downloaded that it is made "Read Only" by right clicking on the file name, clicking on "Properties," and then on "Read Only." This will prevent the original workbook from being overwritten.

Summary of Itemized Cost Per Acre For Summer Fallow - Winter Wheat Rotation Using a Chemical Fallow/Direct Seed System in the 13- to 15-Inch Rainfall Area of Garfield County, Washington.

	Summer Fallow	Winter Wheat	Total Cost
Variable Costs			
Shared Fertilizer Costs:			
Nitrogen	24.50		24.50
Phosphorous	8.10		8.10
Sulfur	5.32		5.32
			0.00
			0.00
Shared Chemical Costs:			
Excel 90	1.26	0.53	1.79
Maverick		8.89	8.89
Ally		2.10	2.10
2,4-D		1.00	1.00
Bronate		7.25	7.25
			0.00
			0.00
Other Costs:			
Crop Insurance		7.00	7.00
Round-up	15.61		15.61
Ultra Pro	4.38		4.38
Shredder Rental	10.00		10.00
Sprayer Rental	3.00	1.33	4.33
Wheat Seed	12.00		12.00
Machinery Repairs	4.85	4.89	9.74
Machinery Fuel & Lube	7.36	6.30	13.66
Labor	9.86	9.67	19.53
			0.00
			0.00
Overhead	5.41	2.53	7.94
Interest	1.98	1.62	3.60
Total Variable Cost	113.63	53.11	166.74
Fixed Costs			
Machinery Depreciation	10.97	6.21	17.18
Machinery Interest	6.98	3.89	10.87
Machinery Insurance	0.49	0.27	0.76
Machinery Taxes	1.47	0.82	2.29
Machinery Housing	0.82	0.46	1.28
Land Taxes	3.25	3.25	6.50
Interest on Sum Fal Cost		11.70	11.70
Land Cost*		37.85	37.85
Total Fixed Cost	23.98	64.44	88.42
Total Cost	137.61	117.55	255.16
*(((Production x Price))/3 - Land Taxes - 1/3 Shared Fertilizer Costs - 1/3 Shared Chemical Costs - 1/3 Crop Insurance - 1/3 Interest on Shared Summer Fallow Fertilizer and Chemical Costs.			
Returns - Variable Cost =	37.26	Bu/Acre =	60.00
		Price =	\$3.40
Returns - Total Cost =	(51.16)	Interest =	8.5%

Summary of Itemized Cost Per Acre For Summer Fallow - Clearfield Wheat Rotation Using a Chemical Fallow/Direct Seed System in the 13- to 15-Inch Rainfall Area of Garfield County, Washington.

	Summer Fallow	Winter Wheat	Total Cost
Variable Costs			
Shared Fertilizer Costs:			
Nitrogen	24.50		24.50
Phosphorous	8.10		8.10
Sulfur	5.32		5.32
			0.00
			0.00
Shared Chemical Costs:			
Excel 90	1.26		1.26
Beyond		21.00	21.00
Bronate		4.50	4.50
			0.00
			0.00
			0.00
			0.00
Other Costs:			
Crop Insurance		7.00	7.00
Round-up	15.61		15.61
Ultra Pro	4.38		4.38
Shredder Rental	10.00		10.00
Sprayer Rental	3.00	1.00	4.00
101 Wheat Seed	16.00		16.00
Machinery Repairs	4.85	4.73	9.58
Machinery Fuel & Lube	7.36	6.08	13.44
Labor	9.86	9.33	19.19
			0.00
			0.00
Overhead	5.61	2.75	8.36
Interest	1.98	1.43	3.41
Total Variable Cost	117.83	57.82	175.65
Fixed Costs			
Machinery Depreciation	10.97	5.89	16.86
Machinery Interest	6.98	3.68	10.66
Machinery Insurance	0.49	0.26	0.75
Machinery Taxes	1.47	0.78	2.25
Machinery Housing	0.82	0.43	1.25
Land Taxes	3.25	3.25	6.50
Interest on Sum Fal Cost		12.05	12.05
Land Cost*		35.77	35.77
Total Fixed Cost	23.98	62.12	86.10
Total Cost	141.81	119.94	261.75
*(((Production x Price))/3 - Land Taxes - 1/3 Shared Fertilizer Costs - 1/3 Shared Chemical Costs - 1/3 Crop Insurance - 1/3 Interest on Shared Summer Fallow Fertilizer and Chemical Costs.			
Returns - Variable Cost =	28.35	Bu/Acre =	60.00
		Price =	\$3.40
Returns - Total Cost =	(57.75)	Interest =	8.5%

Summary of Itemized Cost Per Acre For Summer Fallow - Winter Wheat Rotation Using a Conventional Tillage System in the 13- to 15-Inch Rainfall Area of Garfield County, Washington.

	Summer Fallow	Winter Wheat	Total Cost
Variable Costs			
Shared Fertilizer Costs:			
Nitrogen	34.30		34.30
Sulfur	5.70		5.70
			0.00
			0.00
			0.00
Shared Chemical Costs:			
Ally		2.10	2.10
Bronate		7.25	7.25
2,4-D		1.00	1.00
Excel 90		0.53	0.53
Solution 32		4.36	4.36
			0.00
			0.00
			0.00
Other Costs:			
Crop Insurance		7.00	7.00
Fertilizer Applicator	1.00		1.00
Sprayer Rental		1.00	1.00
Wheat Seed	10.50		10.50
Machinery Repairs	14.58	4.83	19.41
Machinery Fuel & Lube	20.25	6.08	26.33
Labor	19.65	9.33	28.98
			0.00
			0.00
			0.00
Overhead	5.38	2.23	7.61
Interest	1.59	1.07	2.66
Total Variable Cost	112.95	46.78	159.73
Fixed Costs			
Machinery Depreciation	18.56	5.60	24.16
Machinery Interest	11.93	3.50	15.43
Machinery Insurance	0.84	0.25	1.09
Machinery Taxes	2.53	0.74	3.27
Machinery Housing	1.40	0.41	1.81
Land Taxes	3.25	3.25	6.50
Interest on Sum Fal Cost		12.87	12.87
Land Cost*		39.19	39.19
Total Fixed Cost	38.51	65.81	104.32
Total Cost	151.46	112.59	264.05
*(((Production x Price))/3 - Land Taxes - 1/3 Shared Fertilizer Costs - 1/3 Shared Chemical Costs - 1/3 Crop Insurance - 1/3 Interest on Shared Summer Fallow Fertilizer and Chemical Costs.			
Returns - Variable Cost =	44.27	Bu/Acre =	60.00
		Price =	\$3.40
Returns - Total Cost =	(60.05)	Interest =	8.5%



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