



## **2009 Crop Rotation Budgets for Under 15" Precipitation Zone Conventional and Reduced Tillage, Eastern Washington**

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Budget spreadsheets are available at the following link:  
<http://csanr.wsu.edu/Publications/FarmMgmtEconomics.htm>

## INSTRUCTIONS AND ASSUMPTIONS

Since farming is inherently variable and constantly changing, we hope that this spreadsheet format will be helpful in adjusting these budgets to reflect your particular operation. 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

Please examine closely the assumptions we have used and make adjustments to reflect your particular operation. Adjustments in the variable costs can easily be made without affecting the overall accuracy of the budget information. Fixed costs in these budgets are based on a budget generator program that incorporates detailed information on the machinery complement and performs complex calculations based on machinery width, tractor horsepower, type of operation, etc. In the variable costs section, fuel and machinery repair costs will be affected by changes in machinery usage. The fixed costs section of the budget presents costs that are incurred regardless of crop production practices. These costs will change if your machinery complement differs from those in the worksheet.

### **Machinery Costs:**

The machinery complement and associated hourly machinery costs used in these calculations are presented in the last two tabs of this worksheet. Machinery fixed costs include depreciation, interest on the investment, property taxes, insurance, and housing. For the overall farm operation, these costs do not vary by crop, given the ownership of a specific machinery complement, and are incurred whether or not crops are grown. Machinery fixed costs for a specific field operation are determined by multiplying the machine hours per acre times per hour fixed cost. Per hour fixed costs are determined by dividing the total fixed cost by the annual hours of machinery use.

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

$$(\text{Purchase Cost} + \text{Salvage Value})/2$$

The machinery interest charge represents an opportunity cost (returns forgone by investing in a given machine implement rather than in an alternative investment) or interest paid on money borrowed to finance machine purchases, or both. Machinery interest cost for one acre of the crop enterprise being analyzed is determined by multiplying the respective machine hours per acre times the per hour interest costs shown in the machinery complement worksheet.

#### **Land Costs:**

Costs of production among producers tend to be somewhat similar for any particular production system, regardless of production level, when land costs are not taken into consideration. Since the net land rental value is based on production level, land cost varies directly with production level, which in turn directly affects total cost. Land costs, included either as real or as opportunity costs, are based on the share rental arrangement typical in the area. In our study, net land rental cost was calculated as:

$$1/3 \text{ Crop Value} - (1/3 \text{ Fertilizer Cost} + 1/3 \text{ Chemical Cost} + 1/3 \text{ Crop Insurance} + \text{Land Taxes})$$

Land fixed costs include taxes and net rent, which are based on rental agreements typical for the area minus expenditures typically covered by the landlord. The typical lease agreement in the areas surveyed is a one-third land owner and two-third tenant crop share, with the land owner paying land taxes, one-third of the fertilizer cost, one-third of the chemical cost, and one-third of the crop insurance. The tenant covers all other production expenses. **This crop-share percentage can be adjusted in the crop worksheets**, thanks to Herb Hinman's contribution. This valuable tool reveals how factors such as crop and input price increases as well as cropping choices affect revenue for

While the owner-operator will not actually experience a land rental cost, this cost represents the minimum return owner-operators must realize to justify growing the crop themselves. This net rent return represents the income the owner-operator forgoes by producing the crop rather than renting to a tenant who produces the crop. As a result of owning land, the farmer receives both current returns from the farming operation and any long-term appreciation in land value. However, the farmer would continue to realize land value appreciation even if the land is rented out. Consequently, the appropriate land charge for growing the crop is only the forgone net rent. As used in this publication, for land that is owned and not rented, 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 these forgone returns, or opportunity costs, along with the usual production expenses.

**Input Prices:**

Fertilizer prices are based on current (Nov 08) quotes, but they are subject to uncertainty. Input prices are based on April, 2008, quotes from chemical and seed dealers. These prices are subject to change, however, and will affect profitability of different crops. Input price changes can be made on the Input Costs tab (located after the crop budgets). If changes are made on this tab, all of the cost calculations will be automatically updated. If input cost changes are made on individual crop price sheets, the input cost formulas will be over-ridden and this function will no longer work.

**Crop Prices:**

Grain prices are based on futures prices for July and August 2009, as of Nov. 2008, FOB Lind, Washington. (Source: Union Elevator, <http://www.unionelevator.com>).

**Acknowledgments:**

I wish to thank everyone who helped gather all of the information needed to create these worksheets. First and foremost, I thank the farmers who were willing to take the time to share their enterprise information in order to create this worksheet. Without their assistance we would not be able to provide this critical information to others. Several colleagues at Washington State University helped as well, including Herbert Hinman(collaborator, reviewer), Doug Young (reviewer), Richard Koenig, Dennis Roe, and Steve Van Vleet. Sherri Van Vleet and Ellen Miller also provided vital assistance in creating these budgets. In addition, I wish to acknowledge the generous assistance of Robert Smathers, formerly at the University of Idaho. With his permission, we have used the UI spreadsheet format to present our budget information. However, I take responsibility for any errors in these budgets.

Budget spreadsheets are available at the following links:

<http://csanr.wsu.edu/Publications/FarmMgmtEconomics.htm>

**Summary of Returns by Crop and Rotation (\$/acre/yr)**

By Crop:	Total Cost (TC) of Operation			Yield per acre	Price* per unit	Revenue per acre (\$/ac/yr)	Returns over TC (\$/ac/yr)	Total Variable Costs (VC) (\$/ac/yr)	Returns over VC (\$/ac/yr)	Fixed Costs (\$/ac/yr)	Labor (\$/ac/yr)	Crop & Cost Share**	
	(\$/ac/yr)	Unit										Operator:	Owner:
<a href="#">Conv. Tillage Winter Wheat (CTWW)</a>	\$228	bu	55	\$5.15	\$283	\$55	\$46	\$238	\$183	\$7	\$68	67%	Share to operator
<a href="#">Summer Fallow (SF)</a>							\$79	-\$79	\$12	\$8		33%	Share to owner
<a href="#">Reduced Tillage Winter Wheat (RTWW)</a>	\$271	ton	55	\$5.15	\$283	\$13	\$107	\$176	\$164	\$7	\$70		
<a href="#">Chemical Fallow (CF)</a>							\$61	-\$61	\$11	\$4			

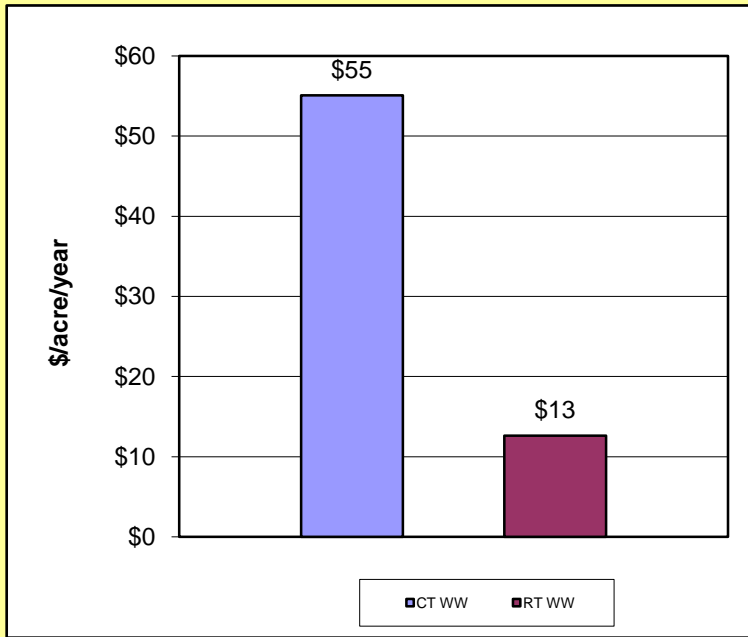
\*August 2009 farmgate prices for grains, posted by the Union Elevator, Lind, WA, www.unionlevator.com, accessed Jan 2009.

\*\*In a crop- and cost-share arrangement, the landowner and the farm manager split the crop and the specified costs, typically fertilizer, chemicals and crop insurance.

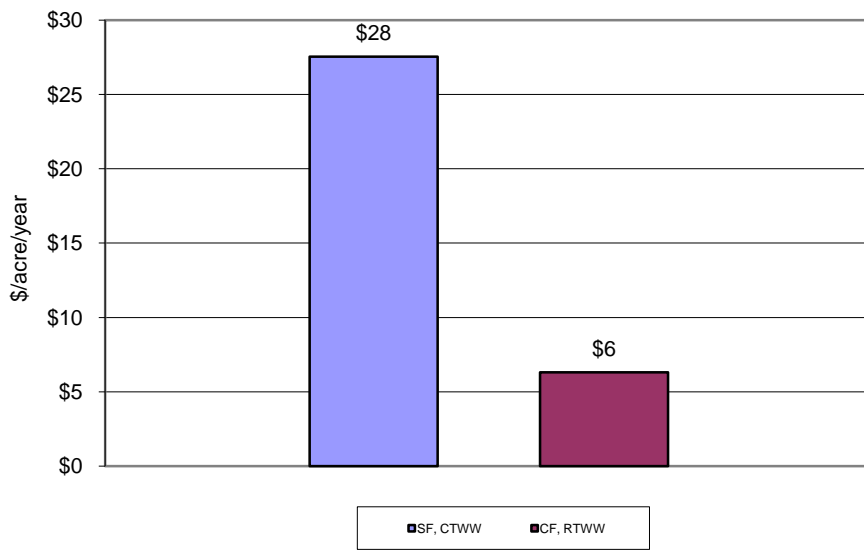
By Rotation:	Total Cost (TC) of Operation			Revenue per acre (\$/ac/yr)	Returns over TC (\$/ac/yr)	Total Variable Costs (VC) (\$/ac/yr)	Returns over VC (\$/ac/yr)	Fixed Costs (\$/ac/yr)	Labor (\$/ac/yr)	Land Payment (Cost-Share) (\$/ac/yr)
	(\$/ac/yr)									
SF, CT WW	\$114			\$142	\$28	\$62	\$79	\$97	\$7	\$34
CF, RT WW	\$135			\$142	\$6	\$84	\$58	\$87	\$6	\$35

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### Summary of Returns by Crop and Rotation (\$/acre/year)



### Returns over Total Costs by Rotation (\$/ac/yr)



**Crop Price:**

WW (\$/bu)

\$5.15

\$5.15

**LEGEND:**

CTWW: Conv. Tillage Winter Wheat

RTWW: Reduced Tillage Winter Wheat

## Input Prices

	Unit	Projected 2009 Price/unit
<b>Fuel:</b>		
Diesel	gal	\$1.75
Gas	gal	\$2.25
<b>Seed:</b>		
Wheat Seed	lb	\$0.15
<b>Fertilizer:</b>		
Nitrogen	lb	\$0.55
Phosphorous	lb	\$1.17
Sulfur	lb	\$0.23
<b>Adjuvants:</b>		
Excel 90	oz	\$0.20
Ultra Pro	oz	\$0.02
<b>Pesticides:</b>		
2,4-D	oz	\$0.13
Glyphosphate	oz	\$0.38
Maverick	oz	\$17.45
Ultra Pro	oz	\$0.02
<b>Custom Rental:</b>		
90' Rental Sprayer	acre	\$1.75
Fertilizer Applicator	acre	\$1.00
<b>Cash Rent:</b>		
	acre	\$0.00
<b>Land Tax:</b>		
	acre	\$3.90
<b>Labor:</b>		
Hourly machine labor*	hour	\$20.00

\*Includes all applicable state and federal taxes.

Budget spreadsheets are available at the following link:  
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**Production Costs for Conventionally Tilled Summer Fallow, Under 15" Precipitation**

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
<b>Variable Costs</b>				
Fertilizer:				\$47.46
Nitrogen (dry)	60	lb	\$0.55	\$33.00
Phosphorous (dry)	10	lb	\$1.17	\$11.70
Sulfur (dry)	12	lb	\$0.23	\$2.76
				\$0.00
Pesticides:				\$6.37
Roundup	12	oz	\$0.38	\$4.56
Excel 90	3.2	oz	\$0.20	\$0.64
Ultra Pro	50	oz	\$0.02	\$1.17
				\$0.00
Machinery:				\$15.62
Fuel	\$2.38	gal	\$1.75	\$4.16
Lubricants	1	acre	\$0.88	\$0.88
Machinery Repairs	1	acre	\$2.67	\$2.67
Machinery Labor	\$0.40	acre	\$20.00	\$7.90
				\$0.00
Custom & Consultants:				\$2.75
Rental Sprayer	1	acre	\$1.75	\$1.75
Rental Fertilizer Applicator	1	acre	\$1.00	\$1.00
				\$0.00
Other:				\$0.00
Storage Facility & Equip. Repairs				\$0.00
Other Labor				\$0.00
				\$0.00
Overhead <sup>1</sup>				\$3.61
Operating Interest <sup>2</sup>				\$3.25
<b>Total Variable Costs</b>				<b>\$79.05</b>
<b>Fixed Costs:</b>				
Machinery depreciation				\$4.34
Machinery interest				\$2.93
Machinery insurance, taxes, housing, licenses				\$0.91
Land Taxes				\$3.90
<b>Total Fixed Costs</b>				<b>\$12.07</b>
<b>Total Costs per Acre</b>				<b>\$91.13</b>

Notes:

Costs of producing summer fallow, plus 9% interest charge, are added to the cost of wheat production.

<sup>1</sup>Covers legal, accounting, and utility fees. Calculated as 5% of operating expenses.

<sup>2</sup>Calculated as 7% interest on operating capital for 6 months.

Details on variable and fixed machinery costs, including fuel, repairs, and machine labor, are located in the [Conventional Tillage Summer Fallow Machinery Costs table](#).



**Schedule of Operations for Conventionally Tilled Summer Fallow, Under 15" of Precipitation**

Month	Operation	Tooling	Materials/Service
March	Spray Weeds	200HP-CT, 90' Sprayer	Rental Sprayer, 12 oz Roundup, 3.2 oz Excel 90, 50 oz Ultra Pro
May	Disc	200HP-WT 25' Disc	
May	Cultivate/Fertilize	200HP-WT 36' Cultivator	Rental Fertilizer Applicator, 60 lb N, 10 lb P, 12 lb S
June	Weeding	200HP-CT 40' Rodweeder	
July	Weeding	200HP-CT 40' Rodweeder	
August	Weeding	200HP-CT 40' Rodweeder	

LEGEND:

200HP-CT: 200 horsepower crawler tractor

200HP-WT: 200 horsepower wheel tractor

## Production Costs for Conventionally Tilled Winter Wheat, Under 15" Precipitation

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
<b>Gross Returns</b>				
Wheat	55	bu	\$5.15	\$283.25
<b>Variable Costs</b>				
Seed:				\$10.50
Wheat Seed	70	lb	\$0.15	\$10.50
Fertilizer <sup>1</sup> :				\$0.00
				\$0.00
Pesticides:				\$7.08
2,4-D	10	oz	\$0.13	\$1.32
Maverick	0.33	oz	\$17.45	\$5.76
				\$0.00
Machinery:				\$16.98
Fuel	1.94	gal	\$1.75	\$3.39
Lubricants	1	acre	\$0.72	\$0.72
Machinery Repairs	1	acre	\$5.86	\$5.86
Machinery Labor	0.35	acre	\$20.00	\$7.00
				\$0.00
Custom & Consultants:				\$1.75
Rental Sprayer	1	acre	\$1.75	\$1.75
				\$0.00
Other:				\$4.50
Crop insurance	1	acre	\$4.50	\$4.50
Storage Facility & Equip. Repairs				\$0.00
Other Labor				\$0.00
Overhead <sup>2</sup>				\$2.04
Operating Interest <sup>3</sup>				\$2.75
<b>Total Variable Costs</b>				<b>\$45.60</b>
Variable Costs per Unit				\$0.83
<b>Net Returns Above Variable Costs</b>				<b>\$237.65</b>

## Production Costs for Conventionally Tilled Winter Wheat, Under 15" Precipitation

<b>Fixed Costs:</b>				
Machinery depreciation				\$6.20
Machinery interest				\$3.59
Machinery taxes, housing, insurance, licenses				\$1.56
Summer Fallow Cost <sup>4</sup>				\$99.33
Land Cost*	1	acre	\$67.99	\$67.99
*Based on Share Rent Percentage:				
Landlord	33.00%			
Tenant	67.00%			
Cash Rent				\$0.00
Land Taxes				\$3.90
<b>Total Fixed Costs</b>				\$182.56
Fixed Costs per Unit				\$3.32
<b>Total Costs per Acre</b>				\$228.16
Total Cost per Unit				\$4.15
<b>Returns to Risk</b>				<b>\$55.09</b>

### Notes:

Includes costs of previous year's summer fallow plus one year's interest.

<sup>1</sup>Fertilizer is actually applied in May of the preceding year.

<sup>2</sup>Covers legal, accounting, and utility fees. Calculated as 5% of Variable Costs.

<sup>3</sup>Calculated as 7% interest on operating capital for 6 months.

<sup>4</sup>Summer fallow cost is calculated as the total cost for fallow production plus 9% interest.

Details on variable and fixed machinery costs, including fuel, repairs, and machine labor, are located in the [Conventional Tillage Winter Wheat Machinery Costs table](#).

### Breakeven Analysis:

	-	Base	+
	10%	Yield	10%
<u>Price</u>	49.5	55	60.5
Operating Cost Breakeven	\$0.92	\$0.83	\$0.75
Ownership Cost Breakeven	\$3.69	\$3.32	\$3.02
Total Cost Breakeven	\$4.61	\$4.15	\$3.77
	-	Base	+
	10%	Price	10%
<u>Yield</u>	\$4.64	\$5.15	\$5.67
Operating Cost Breakeven	9.8	8.9	8.0
Ownership Cost Breakeven	39.4	35.4	32.2
Total Cost Breakeven	49.2	44.3	40.3

### Schedule of Operations for Conventionally Tilled Winter Wheat, Under 15" Precipitation

Month	Operation	Tooling	Materials/Service
September	Seed	200HP-CT, 32' Split Packer Drill	70 lb Seed
April	Crop Insurance		
May	Spray Weeds	200HP-CT, 90' Sprayer	Rental Sprayer, 10 oz 2,4-D, 2/3 oz Maverick*
August	Harvest	25' Combine	

\*Maverick is applied at the rate of 2/3 oz per acre on every other wheat crop.

**LEGEND:**

200HP-CT: 200 horsepower crawler tractor

200HP-WT: 200 horsepower wheel tractor

## Production Costs for Chemical Fallow, Under 15" Precipitation

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
<b>Variable Costs</b>				
Fertilizer:				\$0.00
				\$0.00
Pesticides:				\$40.68
Roundup	88	oz	\$0.38	\$33.44
Excel 90	12.8	oz	\$0.20	\$2.56
Ultra Pro	200	oz	\$0.02	\$4.68
				\$0.00
Machinery:				\$7.41
Fuel	\$1.09	gal	\$1.75	\$1.90
Lubricants	1	acre	\$0.40	\$0.40
Machinery Repairs	1	acre	\$1.03	\$1.03
Machinery Labor	\$0.20	acre	\$20.00	\$4.07
				\$0.00
Custom & Consultants:				\$7.00
Rental Sprayer	4	acre	\$1.75	\$7.00
				\$0.00
Other:				\$0.00
Storage Facility & Equip. Repairs				\$0.00
Other Labor				\$0.00
				\$0.00
Overhead <sup>2</sup>				\$2.75
Operating Interest <sup>3</sup>				\$2.89
<b>Total Variable Costs</b>				<b>\$60.73</b>
<b>Fixed Costs:</b>				
Machinery depreciation				\$1.51
Machinery interest				\$1.06
Machinery insurance, taxes, housing, license				\$0.67
Land Taxes				\$3.90
<b>Total Fixed Costs</b>				<b>\$11.03</b>
<b>Total Costs per Acre</b>				<b>\$71.76</b>

### Notes:

Costs of producing chemical fallow, plus a 9% interest charge, are added to the cost of wheat production.

<sup>1</sup>Four applications of 22 oz each. See CF Calendar.

<sup>2</sup>Covers legal, accounting, and utility fees. Calculated as 5% of operating expenses.

<sup>3</sup>Calculated as 7% interest on operating capital for 6 months.

Details on variable and fixed machinery costs, including fuel, repairs, and machine labor, are located in the [Chem Fallow Machinery Costs table](#).

**Schedule of Operations for Chemical Fallow Preceding Winter Wheat, Under 15" Precipitation**

Month	Operation	Tooling	Materials/Service
March	Spray Weeds	200HP-CT, 90' Sprayer	Rental Sprayer, 22 oz Roundup, 3.2 oz Excel 90, 50 oz Ultra Pro
May	Spray Weeds	200HP-CT, 90' Sprayer	Rental Sprayer, 22 oz Roundup, 3.2 oz Excel 90, 50 oz Ultra Pro
June	Spray Weeds	200HP-CT, 90' Sprayer	Rental Sprayer, 22 oz Roundup, 3.2 oz Excel 90, 50 oz Ultra Pro
August	Spray Weeds	200HP-CT, 90' Sprayer	Rental Sprayer, 22 oz Roundup, 3.2 oz Excel 90, 50 oz Ultra Pro

LEGEND:

200HP-CT: 200 horsepower crawler tractor

200HP-WT: 200 horsepower wheel tractor

## Production Costs for Direct-Seeded Winter Wheat, Under 15" Precipitation

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
<b>Gross Returns</b>				
Wheat	55	bu	\$5.15	\$283.25
<b>Variable Costs</b>				
Seed:				\$12.00
Wheat Seed	80	lb	\$0.15	\$12.00
				\$0.00
Fertilizer:				\$47.46
Nitrogen (dry)	60	lb	\$0.55	\$33.00
Phosphorous (dry)	10	lb	\$1.17	\$11.70
Sulfur (dry)	12	lb	\$0.23	\$2.76
				\$0.00
Pesticides:				\$8.40
2,4-D	20	oz	\$0.13	\$2.64
Maverick	0.33	oz	\$17.45	\$5.76
				\$0.00
Machinery:				\$18.72
Fuel	\$2.13	gal	\$1.75	\$3.73
Lubricants	1	acre	\$0.79	\$0.79
Machinery Repairs	1	acre	\$6.80	\$6.80
Machinery Labor	\$0.37	acre	\$20.00	\$7.40
				\$0.00
Custom & Consultants:				\$4.50
Rental Sprayer	2	acre	\$1.75	\$3.50
Rental Fertilizer Applicator	1	acre	\$1.00	\$1.00
				\$0.00
Other:				\$4.50
Crop insurance	1	acre	4.5	\$4.50
Storage Facility & Equip. Repairs				\$0.00
				\$0.00
Overhead <sup>1</sup>				\$4.78
Operating Interest <sup>2</sup>				\$6.45
<b>Total Variable Costs</b>				<b>\$106.81</b>
Variable Costs per Unit				\$1.94
<b>Net Returns Above Variable Costs</b>				<b>\$176.44</b>

## Production Costs for Direct-Seeded Winter Wheat, Under 15" Precipitation

<b>Fixed Costs:</b>				
Machinery depreciation				\$6.69
Machinery interest				\$3.74
Machinery insurance, taxes housing, licenses				\$1.61
Chemical Fallow Cost <sup>3</sup>				\$78.22
Land Cost*	1	acre	\$69.65	\$69.65
*Based on Share Rent Percentage:				
Landlord	33.00%			
Tenant	67.00%			
Cash Rent				\$0.00
Land Taxes				\$3.90
<b>Total Fixed Costs</b>				<b>\$163.81</b>
Fixed Costs per Unit				\$2.98
<b>Total Costs per Acre</b>				<b>\$270.62</b>
Total Cost per Unit				\$4.92
<b>Returns to Risk</b>				<b>\$12.63</b>

### Notes:

Includes costs of previous year's summer fallow plus one year's interest.

<sup>1</sup>Covers legal, accounting, and utility fees. Calculated as 5% of Variable Costs.

<sup>2</sup>Calculated as 7% interest on operating capital for 6 months.

<sup>3</sup>Chem fallow cost is calculated as the total cost for fallow production plus 9% interest.

Details on variable and fixed machinery costs, including fuel, repairs, and machine labor, are located in the [Reduced Tillage Winter Wheat Machinery Costs table](#).

### Breakeven Analysis:

	- 10%	Base Yield	+ 10%
<u>Price</u>	49.5	55	60.5
Operating Cost Breakeven	\$2.16	\$1.94	\$1.77
Ownership Cost Breakeven	\$3.31	\$2.98	\$2.71
Total Cost Breakeven	\$5.47	\$4.92	\$4.47
	- 10%	Base Price	+ 10%
<u>Yield</u>	\$4.64	\$5.15	\$5.67
Operating Cost Breakeven	23.0	20.7	18.9
Ownership Cost Breakeven	35.3	31.8	28.9
Total Cost Breakeven	58.4	52.5	47.8



### Schedule of Operations for Direct-Seeded Winter Wheat, Under 15" Precipitation

Month	Operation	Tooling	Materials/Service
September	Drill/Fert.	200HP-CT 36' Direct Seed Drill	Rental Fertilizer Applicator, 80 lb seed, 60 lb N, 10 lb P, 12 lb S
November	Spray Weeds	200HP-CT, 90' Sprayer	Rental Sprayer, 10 oz 2,4-D
April	Spray Weeds	200HP-CT, 90' Sprayer	Rental Sprayer, 10 oz 2,4-D, 2/3 oz Maverick*
April	Crop Insurance		
August	Harvest	30' Combine	

\*Maverick is applied at the rate of 2/3 oz per acre on every other wheat crop.

**LEGEND:**

200HP-CT: 200 horsepower crawler tractor

200HP-WT: 200 horsepower wheel tractor

### Machinery Complement for Conventional and Reduced Tillage Dryland Grain Farms, Under 15" Precipitation

Type of Machine	Replacement Value \$	Age When Purchased	Years of Life	Annual Hours of Use	Salvage Value \$	Annual Repairs (Materials & Labor) \$	Gallons of Fuel/Hr.	Taxes, Housing, Insur., Licenses %	Labor Multiplier	Acres per Hour
<b>Conventional Tillage Equipment:</b>										
40' Rodweeder	15500	5	15	260	2000	850	15	2.6	1.2	29
36' Cultivator w/Harrow	18000	5	15	100	3000	750	9	0.6	1.2	26
25' Disc	10000	5	15	220	2000	500	12	0.6	1.2	12
32' Split Packer Drill	12000	15	12	170	4000	2500	12	3	1.2	14
<b>Reduced Tillage Equipment:</b>										
36' JD-455 Drill	25000	10	12	175	1500	5000	12	3	1.2	15
<b>Tractors, Combines, ATVs:</b>										
50HP-WT w/Bucket	15000	15	20	150	3500	200	3	1.2	1.1	
200HP-CT	10000	20	15	350	2000	1000	8	1.1	1.1	
200HP-WT	60000	10	12	200	8000	2000	9	1.2	1.1	
25' Combine	75000	8	12	140	5000	5000	8	2.6	1.2	9.5
25' Combine	75000	8	12	140	5000	5000	8	2.6	1.2	9.5
4WD-ATV	6500	0	10	200	1000	100	1.2	1.2	1.1	
<b>Trucks:</b>										
				Miles/year:			MPG:			
2-Ton Truck	20000	15	15	1000	2000	1000	6	2.6	1.2	
Tandem Axle Truck	35000	15	15	2000	4500	2000	6	10.1	1.2	
Trap Wagon	15000	10	10	1000	3000	400	12	3.8	1.2	
3/4-Ton Pickup	22000	5	7	12000	7500	1500	12	6.8	1.2	

Note: Farmsize is assumed to be 2500 acres for the purpose of machinery cost calculations.

## Hourly Machinery Costs for Conventional and Reduced Tillage Dryland Grain Farms, Under 15" Precipitation (\$/acre)

Note: Per hour machinery costs can be changed in this master table and they will update throughout. Per acre costs are calculated in the Machine Cost program using the values listed in the Machinery Complement tab.

		Fixed Costs (\$/acre):			Variable Costs (units/acre):						Total Costs (\$/acre)
	Total Annual Usage (miles):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/ac)	Fuel (\$/acre)	Fuel (gal/ac)	Lube (\$/acre)	Total Cost
<b>Trucks:</b>											
0.75-Ton 4WD Pickup	12000	\$0.07	\$0.04	\$0.04	\$0.05	\$0.31	0.02	\$0.11	0.04	\$0.00	\$0.62
2-Ton Truck	1000	\$0.24	\$0.17	\$0.06	\$0.20	\$0.20	0.01	\$0.10	0.04	\$0.02	\$0.99
Tandem Axle Truck	2000	\$0.41	\$0.30	\$0.40	\$0.40	\$0.40	0.02	\$0.17	0.07	\$0.03	\$2.11
Trap Wagon	1000	\$0.48	\$0.27	\$0.14	\$0.16	\$0.14	0.01	\$0.05	0.02	\$0.01	\$1.25
<b>Tractors, other equipment:</b>											
	Total Annual Usage (hours):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/ac)	Fuel (\$/acre)	Fuel (gal/ac)	Lube (\$/acre)	Total Cost
4WD-ATV	200	\$0.11	\$0.06	\$0.01	\$0.02	\$0.88	0.04	\$0.14	0.06	\$0.02	\$1.24
50HP-WT	100	\$0.12	\$0.14	\$0.02	\$0.04	\$0.54	0.03	\$0.23	0.09	\$0.03	\$1.12
25' Combine	140	\$4.37	\$2.25	\$0.78	\$3.74	\$2.51	0.13	\$2.10	0.84	\$0.31	\$16.06
25' Combine	140	\$4.37	\$2.25	\$0.78	\$3.74	\$2.51	0.13	\$2.10	0.84	\$0.31	\$16.06
<b>200HP-CT with:</b>											
36' JD455 Drill	175	\$0.85	\$0.47	\$0.16	\$2.11	\$1.62	0.08	\$1.47	0.59	\$0.22	\$6.90
40' Rodweeder	260	\$0.17	\$0.13	\$0.02	\$0.21	\$0.76	0.04	\$0.69	0.28	\$0.10	\$2.08
32' Split Packer Drill	185	\$0.38	\$0.34	\$0.11	\$1.21	\$1.62	0.08	\$1.47	0.59	\$0.22	\$5.35
90' Sprayer		\$0.02	\$0.02	\$0.00	\$0.04	\$0.48	0.02	\$0.48	0.19	\$0.07	\$1.11
<b>200HP-WT with:</b>											
36' Cultivator & Harrow	100	\$1.22	\$0.79	\$0.10	\$0.68	\$0.85	0.04	\$0.87	0.35	\$0.13	\$4.64
25' Disc	220	\$1.16	\$0.75	\$0.08	\$0.45	\$1.90	0.10	\$1.73	0.69	\$0.26	\$6.33

Note: Farm size is assumed to be 2500 acres for the purposes of machinery cost calculations.

**Costs by Crop:**

<a href="#">Click on crop to see machinery costs by crop.</a>
<a href="#">Summer Fallow</a>
<a href="#">Conventional Tillage Winter Wheat</a>
<a href="#">Chemical Fallow</a>
<a href="#">Reduced Tillage Winter Wheat</a>

Hourly Machinery Costs for Conventional Tillage <b>Summer Fallow</b> Dryland Grain Farms, Under 15" Precipitation (\$/acre)											
		Fixed Costs (\$/acre):			Variable Costs (units/acre):						Total Costs (\$/acre)
	Total Annual Usage (miles):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/ac)	Fuel (\$/acre)	Fuel (gal/ac)	Lube (\$/acre)	Total Cost
<b>Trucks:</b>											
0.75-Ton 4WD Pickup	12000	\$0.07	\$0.04	\$0.04	\$0.05	\$0.31	0.02	\$0.11	0.04	\$0.00	\$0.62
2-Ton Truck	1000	\$0.24	\$0.17	\$0.06	\$0.20	\$0.20	0.01	\$0.10	0.04	\$0.02	\$0.99
Tandem Axle Truck	2000	\$0.41	\$0.30	\$0.40	\$0.40	\$0.40	0.02	\$0.17	0.07	\$0.03	\$2.11
Trap Wagon	1000	\$0.48	\$0.27	\$0.14	\$0.16	\$0.14	0.01	\$0.05	0.02	\$0.01	\$1.25
<b>Tractors, other equipment:</b>											
	Total Annual Usage (hours):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/ac)	Fuel (\$/acre)	Fuel (gal/ac)	Lube (\$/acre)	Total Cost
4WD-ATV	200	\$0.11	\$0.06	\$0.01	\$0.02	\$0.88	0.04	\$0.14	0.06	\$0.02	\$1.24
50HP-WT	100	\$0.12	\$0.14	\$0.02	\$0.04	\$0.54	0.03	\$0.23	0.09	\$0.03	\$1.12
<i>200HP-CT with:</i>											
40' Rodweeder	260	\$0.17	\$0.13	\$0.02	\$0.21	\$0.76	0.04	\$0.69	0.28	\$0.10	\$2.08
40' Rodweeder	260	\$0.17	\$0.13	\$0.02	\$0.21	\$0.76	0.04	\$0.69	0.28	\$0.10	\$2.08
40' Rodweeder	260	\$0.17	\$0.13	\$0.02	\$0.21	\$0.76	0.04	\$0.69	0.28	\$0.10	\$2.08
90' Sprayer (Rental)		\$0.02	\$0.02	\$0.00	\$0.04	\$0.48	0.02	\$0.48	0.19	\$0.07	\$1.11
<i>200HP-WT with:</i>											
36' Cultivator & Harrow	100	\$1.22	\$0.79	\$0.10	\$0.68	\$0.85	0.04	\$0.87	0.35	\$0.13	\$4.64
25' Disc	220	\$1.16	\$0.75	\$0.08	\$0.45	\$1.90	0.10	\$1.73	0.69	\$0.26	\$6.33
<b>Total</b>		<b>\$4.34</b>	<b>\$2.93</b>	<b>\$0.91</b>	<b>\$2.67</b>	<b>\$7.98</b>	<b>0.40</b>	<b>\$5.95</b>	<b>2.38</b>	<b>\$0.88</b>	<b>\$25.65</b>

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### Hourly Machinery Costs for Conventional Tillage **Winter Wheat** Dryland Grain Farms, Under 15" Precipitation (\$/acre)

		Fixed Costs (\$/acre):			Variable Costs (units/acre):						Total Costs (\$/acre)
	Total Annual Usage (miles):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/ac)	Fuel (\$/acre)	Fuel (gal/ac)	Lube (\$/acre)	Total Cost
<b>Trucks:</b>											
0.75-Ton 4WD Pickup	12000	\$0.07	\$0.04	\$0.04	\$0.05	\$0.31	0.02	\$0.11	0.04	\$0.00	\$0.62
2-Ton Truck	1000	\$0.24	\$0.17	\$0.06	\$0.20	\$0.20	0.01	\$0.10	0.04	\$0.02	\$0.99
Tandem Axle Truck	2000	\$0.41	\$0.30	\$0.40	\$0.40	\$0.40	0.02	\$0.17	0.07	\$0.03	\$2.11
Trap Wagon	1000	\$0.48	\$0.27	\$0.14	\$0.16	\$0.14	0.01	\$0.05	0.02	\$0.01	\$1.25
<b>Tractors, other equipment:</b>											
	Total Annual Usage (hours):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/ac)	Fuel (\$/acre)	Fuel (gal/ac)	Lube (\$/acre)	Total Cost
4WD-ATV	200	\$0.11	\$0.06	\$0.01	\$0.02	\$0.88	0.04	\$0.14	0.06	\$0.02	\$1.24
50HP-WT	100	\$0.12	\$0.14	\$0.02	\$0.04	\$0.54	0.03	\$0.23	0.09	\$0.03	\$1.12
25' Combine	140	\$4.37	\$2.25	\$0.78	\$3.74	\$2.51	0.13	\$2.10	0.84	\$0.31	\$16.06
<i>200HP-CT with:</i>											
32' Split Packer Drill	185	\$0.38	\$0.34	\$0.11	\$1.21	\$1.62	0.08	\$1.47	0.59	\$0.22	\$5.35
90' Sprayer		\$0.02	\$0.02	\$0.00	\$0.04	\$0.48	0.02	\$0.48	0.19	\$0.07	\$1.11
<b>Total</b>		<b>\$6.20</b>	<b>\$3.59</b>	<b>\$1.56</b>	<b>\$5.86</b>	<b>\$7.08</b>	<b>0.35</b>	<b>\$4.85</b>	<b>1.94</b>	<b>\$0.72</b>	<b>\$29.85</b>

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### Hourly Machinery Costs for Reduced Tillage **Chemical Fallow** Dryland Grain Farms, Under 15" Precipitation (\$/acre)

		Fixed Costs (\$/acre):			Variable Costs (units/acre):						Total Costs (\$/acre)
	Total Annual Usage (miles):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/ac)	Fuel (\$/acre)	Fuel (gal/ac)	Lube (\$/acre)	Total Cost
<b>Trucks:</b>											
0.75-Ton 4WD Pickup	12000	\$0.07	\$0.04	\$0.04	\$0.05	\$0.31	0.02	\$0.11	0.04	\$0.00	\$0.62
2-Ton Truck	1000	\$0.24	\$0.17	\$0.06	\$0.20	\$0.20	0.01	\$0.10	0.04	\$0.02	\$0.99
Tandem Axle Truck	2000	\$0.41	\$0.30	\$0.40	\$0.40	\$0.40	0.02	\$0.17	0.07	\$0.03	\$2.11
Trap Wagon	1000	\$0.48	\$0.27	\$0.14	\$0.16	\$0.14	0.01	\$0.05	0.02	\$0.01	\$1.25
<b>Tractors, other equipment:</b>											
	Total Annual Usage (hours):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/ac)	Fuel (\$/acre)	Fuel (gal/ac)	Lube (\$/acre)	Total Cost
4WD-ATV	200	\$0.11	\$0.06	\$0.01	\$0.02	\$0.88	0.04	\$0.14	0.06	\$0.02	\$1.24
50HP-WT	100	\$0.12	\$0.14	\$0.02	\$0.04	\$0.54	0.03	\$0.23	0.09	\$0.03	\$1.12
<i>200HP-CT with:</i>											
90' Sprayer		\$0.02	\$0.02	\$0.00	\$0.04	\$0.48	0.02	\$0.48	0.19	\$0.07	\$1.11
90' Sprayer		\$0.02	\$0.02	\$0.00	\$0.04	\$0.48	0.02	\$0.48	0.19	\$0.07	\$1.11
90' Sprayer		\$0.02	\$0.02	\$0.00	\$0.04	\$0.48	0.02	\$0.48	0.19	\$0.07	\$1.11
90' Sprayer		\$0.02	\$0.02	\$0.00	\$0.04	\$0.48	0.02	\$0.48	0.19	\$0.07	\$1.11
<b>Total</b>		<b>\$1.51</b>	<b>\$1.06</b>	<b>\$0.67</b>	<b>\$1.03</b>	<b>\$4.39</b>	<b>0.20</b>	<b>\$2.72</b>	<b>1.09</b>	<b>\$0.40</b>	<b>\$11.77</b>

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### Hourly Machinery Costs for Reduced Tillage **Winter Wheat** Dryland Grain Farms, Under 15" Precipitation (\$/acre)

		Fixed Costs (\$/acre):			Variable Costs (units/acre):						Total Costs (\$/acre)
	Total Annual Usage (miles):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/ac)	Fuel (\$/acre)	Fuel (gal/ac)	Lube (\$/acre)	Total Cost
<b>Trucks:</b>											
0.75-Ton 4WD Pickup	12000	\$0.07	\$0.04	\$0.04	\$0.05	\$0.31	0.02	\$0.11	0.04	\$0.00	\$0.62
2-Ton Truck	1000	\$0.24	\$0.17	\$0.06	\$0.20	\$0.20	0.01	\$0.10	0.04	\$0.02	\$0.99
Tandem Axle Truck	2000	\$0.41	\$0.30	\$0.40	\$0.40	\$0.40	0.02	\$0.17	0.07	\$0.03	\$2.11
Trap Wagon	1000	\$0.48	\$0.27	\$0.14	\$0.16	\$0.14	0.01	\$0.05	0.02	\$0.01	\$1.25
<b>Tractors, other equipment:</b>											
	Total Annual Usage (hours):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/ac)	Fuel (\$/acre)	Fuel (gal/ac)	Lube (\$/acre)	Total Cost
4WD-ATV	200	\$0.11	\$0.06	\$0.01	\$0.02	\$0.88	0.04	\$0.14	0.06	\$0.02	\$1.24
50HP-WT	100	\$0.12	\$0.14	\$0.02	\$0.04	\$0.54	0.03	\$0.23	0.09	\$0.03	\$1.12
25' Combine	140	\$4.37	\$2.25	\$0.78	\$3.74	\$2.51	0.13	\$2.10	0.84	\$0.31	\$16.06
<i>200HP-CT with:</i>											
36' JD455 Drill	175	\$0.85	\$0.47	\$0.16	\$2.11	\$1.62	0.08	\$1.47	0.59	\$0.22	\$6.90
90' Sprayer	0	\$0.02	\$0.02	\$0.00	\$0.04	\$0.48	0.02	\$0.48	0.19	\$0.07	\$1.11
90' Sprayer	0	\$0.02	\$0.02	\$0.00	\$0.04	\$0.48	0.02	\$0.48	0.19	\$0.07	\$1.11
<b>Total</b>		<b>\$6.69</b>	<b>\$3.74</b>	<b>\$1.61</b>	<b>\$6.80</b>	<b>\$7.56</b>	<b>0.37</b>	<b>\$5.33</b>	<b>2.13</b>	<b>\$0.79</b>	<b>\$32.51</b>

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