

St John Site, No-Till



Photo: Terry Day

2009 Crop Rotation Budgets for 15" to 18" Precipitation Zone Dryland Grain Producing Region of the NW Wheat & Range Region Climate Friendly Farming Project: No-Till Scenario

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Budget spreadsheets are available at the following links:
<http://www.uidaho.edu/~kpainter>
<http://csanr.wsu.edu/Publications/FarmMgmtEconomics.htm>



INSTRUCTIONS AND ASSUMPTIONS

General Instructions:

A color coding system is used to indicate the source of the data for each budget and to show which data can be adjusted. Orange cells can be changed without affecting the underlying equations in this cost calculator. Data in yellow cells are from the Summary sheet (click on yellow Summary tab or select it from the TabSelect drop-down menu). In the Summary sheet both crop price and yield are in orange cells. Adjusting any of those numbers will automatically update all calculations throughout the spreadsheet. You can quickly compare price and yield changes by crop and rotation on net returns and land costs. You can also see rotational impacts. For example, if you know that a crop will have a higher yield in a particular sequence, adjust the crop yield in the upper table and see the rotational impact in the second table. You can save the file with this data, then create another scenario and save it as a different file. The graphical tab will illustrate the results of these changes automatically.

Input Prices:

By entering input prices on the Input Prices sheet (click on the green Input Prices tab), all of the cost calculations will be automatically updated. Input cost changes can also be made on individual crop price sheets, over-riding the input cost formulae on that particular crop budget. Fertilizer prices are based on current (Apr 09) quotes, but they are subject to uncertainty. Chemical input prices are based on February, 2009, quotes from chemical and seed dealers. These prices are subject to change, however, and will affect profitability of different crops.

Crop Prices:

Crop prices can be adjusted on the Summary tab and the effects of this change will be reflected throughout all the budgets. (Yields can be adjusted similarly.) Grain prices are based on futures prices for August 2009, as of July 2009, FOB Lind, Washington. (Source: Union Elevator, <http://www.unionelevator.com>).

Machinery Costs:

The machinery complement and associated hourly machinery cost data are in the last two sheets. The hourly machinery cost data are used to create the individualized machinery cost data for each budget, located in a separate tab for each crop. In the crop budget sheets, entries in blue cells are calculated by the machinery cost program and come from the associated Machinery Cost sheet for that crop. Machinery fixed costs include capital recovery costs, 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. Your per acre fixed costs will change if the farm size differs significantly from the size used in these budgets.

Land Costs:

Land costs, included either as real or as opportunity costs, are based on a typical share rental arrangement. We calculate net land rental cost as a cost share as follows:

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

A 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.** If the percentage is adjusted on the Summary tab, it is changed for all crops. If you want different crop-share percentages for different crops, adjust the percentage on the budget sheet for that crop. This valuable tool reveals how factors such as crop and input price increases as well as cropping choices affect revenue for landlords and operators differently.

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. To determine the profitability of crop production relative to other activities, the owner-operator may want to consider these forgone rental returns along with the usual production expenses.

General 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. Machinery costs are more difficult to adjust, due to the underlying complexity of machinery cost calculations. A separate machinery cost calculator program is used to develop the costs used in these budgets, which are based on specific machinery widths, tractor horsepower, type of operation, etc. The machinery cost program and data sets specific to this budget are available upon request.

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. However, I take responsibility for any errors in these budgets.

Budget spreadsheets are available at the following link:

<http://www.uidaho.edu/~kpainter/>

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

By Crop:	Total		Yield (unit/ac)	Price* per unit	Revenue (\$/acre)	Returns over TC (\$/acre)	Variable Costs (VC) (\$/acre)	Returns over VC (\$/acre)	Fixed Costs (\$/acre)	Machine Labor (\$/acre)	Crop & Cost Share** Operator: Owner:	0.67 Share to operator 0.33 Share to owner
	Costs (TC) (\$/acre)	Unit										
Winter Wheat (WW)	\$354	bu	78	4.99	\$389	\$36	\$172	\$217	\$182	\$14	\$78	
Spring Barley (SB)	\$213	ton	1.5	125.835	\$189	-\$24	\$166	\$22	\$47	\$13	\$21	
Chem Fallow (CF)***	\$69				\$0	-\$69	\$59	-\$59	\$11	\$9	\$0	

*August 2009 farmgate prices for grains, posted by the Union Elevator, Lind, WA, www.unionelevator.com, accessed July 2009.

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

***All chem fallow costs are included in the costs for producing winter wheat, plus one year's interest. These figures are for informational purposes only.

By Rotation:	Total Cost of Operation (\$/ac/yr)	Revenue per acre (\$/ac/yr)	Returns over TC (\$/ac/yr)	Variable Costs (VC) (\$/ac/yr)	Returns over VC (\$/ac/yr)	Fixed Costs (\$/ac/yr)	Machine Labor (\$/ac/yr)	Land Payment (Cost-Share) (\$/ac/yr)
WW, SB, CF	\$189	\$193	\$4	\$132	\$80	\$80	\$12	\$33

Budget spreadsheets are available at the following links:

<http://www.uidaho.edu/~kpainter>

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

Input Prices

	Unit	Est. 2009 Price/unit
Fuel:		
Diesel	gal	\$2.25
Gas	gal	\$2.75
Seed:		
Wheat Seed	lb	\$0.15
Barley Seed	lb	\$0.12
Hard Red Spring Wheat	lb	\$0.22
Fertilizer:		
Nitrogen	lb	\$0.52
Phosphorous	lb	\$0.65
Sulfur	lb	\$0.44
Adjuvants:		
Crop Oil Concentrate	pt	\$1.83
Excel 90	oz	\$0.20
M90	oz	\$0.15
Ultra Pro	oz	\$0.02
Pesticides:		
2,4-D	oz	\$0.16
Ally	oz	\$14.52
Axial	oz	\$1.63
Bronate	pt	\$8.16
Brox M Xtra	oz	\$0.39
Glyphosphate	oz	\$0.42
Maverick	oz	\$19.82
Orion	oz	\$1.19
Poast	pt	\$10.40
Quilt	oz	\$1.49
Custom Rental:		
90' Rental Sprayer	acre	\$1.75
Fertilizer Applicator	acre	\$1.00
Cash Rent:		
	acre	\$0.00
Land Tax:		
	acre	\$3.90
Labor:		
Hourly machine labor*	hour	\$20.00
Interest:		
Operating Loan	%	\$0.08
Machinery Loan/investment	%	7.50%

*Includes all applicable state and federal taxes.

Production Costs for Chemical Fallow, 15-18" Precipitation

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
Variable Costs				
Fertilizer:				\$0.00
				\$0.00
Pesticides:				\$33.15
Roundup	66	oz	\$0.42	\$27.72
Excel 90	9.6	oz	\$0.20	\$1.92
Ultra Pro	150	oz	\$0.02	\$3.51
				\$0.00
Machinery:				\$15.43
Fuel	1.66	gal	\$2.25	\$3.73
Lubricants	1	acre	\$0.54	\$0.54
Machinery Repairs	1	acre	\$2.29	\$2.29
Machinery Labor	0.44	acre	\$20.00	\$8.87
				\$0.00
Custom & Consultants:				\$5.25
Rental Sprayer	3	acre	\$1.75	\$5.25
				\$0.00
Other:				\$0.00
Storage Facility & Equip. Repairs				\$0.00
Other Labor				\$0.00
				\$0.00
Overhead ¹				\$2.69
Operating Interest ²				\$2.36
Total Variable Costs				\$58.88
Fixed Costs:				
Machinery depreciation				\$3.60
Machinery interest				\$2.40
Machinery insurance, taxes, housing, licenses				\$0.60
Land Taxes				\$3.90
Total Fixed Costs				\$10.51
Total Costs per Acre				\$69.39

Notes:

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

²Calculated as 7% interest on operating capital for 6 months.

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

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

Schedule of Operations for Chemical Fallow Preceding Winter Wheat, 15-18" Precipitation

Month	Operation	Tooling	Materials/Service
March	Spray Weeds	350HP CHAL, 90' Sprayer	Rental Sprayer, 22 oz Roundup, 3.2 oz Excel 90, 50 oz Ultra Pro
May	Spray Weeds	350HP-CHAL, 90' Sprayer	Rental Sprayer, 22 oz Roundup, 3.2 oz Excel 90, 50 oz Ultra Pro
August	Spray Weeds	350HP-CHAL, 90' Sprayer	Rental Sprayer, 22 oz Roundup, 3.2 oz Excel 90, 50 oz Ultra Pro

Production Costs for Direct-Seeded Winter Wheat, 15-18" Precipitation

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
Gross Returns				
Wheat	78	bu	\$4.99	\$389.22
Variable Costs				
Seed:				\$25.50
Wheat Seed	80	lb	\$0.15	\$12.00
Fertilizer:				\$55.88
Nitrogen (dry)	89	lb	\$0.52	\$46.28
Phosphorous (dry)	8	lb	\$0.65	\$5.20
Sulfur (dry)	10	lb	\$0.44	\$4.40
				\$0.00
Pesticides:				\$45.04
Roundup	18	oz	\$0.42	\$7.56
M90	1.7	oz	\$0.15	\$0.26
Ammonium Sulfate	50	oz	\$0.02	\$0.75
2,4-D	20	oz	\$0.16	\$3.20
Maverick ¹	0.33	oz	\$19.82	\$6.54
Axial	16.4	oz	\$1.63	\$26.73
Machinery:				\$28.76
Fuel	3.69	gal	\$2.25	\$8.29
Lubricants	1	acre	\$1.30	\$1.30
Machinery Repairs	1	acre	\$5.38	\$5.38
Machinery Labor	0.69	hour	\$20.00	\$13.78
				\$0.00
Custom & Consultants:				\$3.50
Rental Sprayer	2	acre	\$1.75	\$3.50
				\$0.00
Other:				\$8.42
Crop insurance ²	1	acre	\$8.42	\$8.42
Storage Facility & Equip. Repairs				\$0.00
Other Labor				\$0.00
Overhead ³				\$8.35
Operating Interest ⁴				\$10.03
Total Variable Costs				\$171.97
Variable Costs per Unit				\$2.20
Net Returns Above Variable Costs				\$217.25

Production Costs for Direct-Seeded Winter Wheat, 15-18" Precipitation

Fixed Costs:				
Machinery depreciation				\$12.64
Machinery interest				\$9.16
Machinery insurance, taxes housing, licenses				\$2.74
Chemical Fallow Cost ⁵				\$75.63
Land Cost*	1	acre	\$77.52	\$77.52
*Based on Share Rent Percentage:				
Landlord	33.00%			
Tenant	67.00%			
Cash Rent				\$0.00
Land Taxes				\$3.90
Total Fixed Costs				\$181.60
Fixed Costs per Unit				\$2.33
Total Costs per Acre				\$353.57
Total Cost per Unit				\$4.53
Returns to Risk				\$35.65

¹Maverick is applied at the rate of 2/3 oz per acre on every other wheat crop.

²Average Whitman County CRC insurance premium based on 2008 rates at 75% coverage.

³Covers legal, accounting, and utility fees. Calculated as 5% of operating expenses.

⁴Calculated as 7% interest on operating capital for 6 months.

⁵Chem 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 [Winter Wheat Machinery Costs table](#).

Breakeven Analysis:			
	-	Base	+
	10%	Yield	10%
<u>Price</u>	70.20	78	85.80
Operating Cost Breakeven	\$2.45	\$2.20	\$2.00
Ownership Cost Breakeven	\$2.59	\$2.33	\$2.12
Total Cost Breakeven	\$5.04	\$4.53	\$4.12
	-	Base	+
	10%	Price	10%
<u>Yield</u>	\$4.49	\$4.99	\$5.49
Operating Cost Breakeven	38.3	34.5	31.3
Ownership Cost Breakeven	40.4	36.4	33.1
Total Cost Breakeven	78.7	70.9	64.4

Schedule of Operations for Direct-Seeded Winter Wheat, 15-18" Precipitation

Month	Operation	Tooling	Materials/Service
September	Spray Weeds	350HP-CHAL, 90' Sprayer	Rental Sprayer, 18 oz Roundup, 1.5 oz M90 50 oz Ammonium Sulfate
September	Drill/Fertilize	350HP-CHAL 35' Direct Seed Drill	Rental Fertilizer Applicator, 80 lb seed, 89 lb N, 8 lb P, 10 lb S
November	Spray Weeds	350HP-CHAL, 90' Sprayer	Rental Sprayer, 10 oz 2,4-D, 16.4 oz Axial
April	Spray Weeds	350HP-CHAL, 90' Sprayer	Rental Sprayer, 10 oz 2,4-D, 1/3 oz Maverick*
April	Crop Insurance		
August	Harvest	30' Combine	

Production Costs for Direct-Seeded Spring Barley, 15-18" Precipitation

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
Gross Returns				
Barley	1.5	ton	\$125.84	\$188.75
Variable Costs				
Seed:				\$9.60
Barley Seed	80	lb	\$0.12	\$9.60
Fertilizer:				\$52.69
Nitrogen	80	lb	\$0.52	\$41.79
Phosphorous	10	lb	\$0.65	\$6.50
Sulfur	10	lb	\$0.44	\$4.40
Pesticides:				\$54.87
Bronate	1	pt	\$8.16	\$8.16
2,4-D	8	oz	\$0.16	\$1.28
Excel 90	10.4	oz	\$0.20	\$2.08
Roundup	34	oz	\$0.42	\$14.28
Ultra Pro	100	oz	\$0.02	\$2.34
Axial	16.4	oz	\$1.63	\$26.73
Machinery:				\$24.86
Fuel	2.99	gal	\$2.25	\$6.73
Lubricants	1	acre	\$1.04	\$1.04
Machinery Repairs	1	acre	\$4.56	\$4.56
Machinery Labor	0.63	acre	\$20.00	\$12.53
Custom & Consultants:				\$6.25
Rental Sprayer	3	acre	\$1.75	\$5.25
Rental Fertilizer Applicator	1	acre	\$1.00	\$1.00
Other:				\$4.83
Crop insurance ¹	1	acre	\$4.83	\$4.83
Storage Facility & Equip. Repairs				\$0.00
Other Labor				\$0.00
Overhead ²				\$7.65
Operating Interest ³				\$5.74
Total Variable Costs				\$166.50
Variable Costs per Unit				\$111.00
Net Returns Above Variable Costs				\$22.26

Production Costs for Direct-Seeded Spring Barley, 15-18" Precipitation

Fixed Costs:				
Machinery depreciation				\$11.06
Machinery interest				\$7.86
Machinery insurance, taxes housing, licenses				\$2.41
Land Cost*	1	acre	\$21.30	\$21.30
*Based on Share Rent Percentage:				
Landlord	33.00%			
Tenant	67.00%			
Land Rent				\$0.00
Land Taxes				\$3.90
Total Fixed Costs				\$46.54
Fixed Costs per Unit				\$31.02
Total Costs per Acre				\$213.03
Total Cost per Unit				\$142.02
Returns to Risk				-\$24.28

Notes:

¹Average Whitman County CRC insurance premium based on 2008 rates at 75% coverage.

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

³Calculated 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 [Spring Barley Machinery Costs table](#).

Break-even Analysis:

	- 10%	Base Yield	+ 10%
<u>Price</u>	1.35	1.5	1.65
Operating Cost Breakeven	\$123.33	\$111.00	\$100.91
Ownership Cost Breakeven	\$34.47	\$31.02	\$28.20
Total Cost Breakeven	\$157.80	\$142.02	\$129.11
	- 10%	Base Price	+ 10%
<u>Yield</u>	\$113.25	\$125.84	\$138.42
Operating Cost Breakeven	1.5	1.3	1.2
Ownership Cost Breakeven	0.4	0.4	0.3
Total Cost Breakeven	1.9	1.7	1.5

Schedule of Operations for Direct-Seeded Spring Barley, 15-18" Precipitation

Month	Operation	Tooling	Materials/Service
March	Spray Weeds	350HP-CHAL, 90' Sprayer	Rental Sprayer, 22 oz Roundup, 3.2 oz Excel 90, 50 oz Ultra Pro
April	Seed/Fertilize	350HP-CHAL, 35' Direct Seed Drill	Rental Fertilizer Applicator, 80 lb Barley Seed, 80.36 lb N, 10 lb P, 10 lb S
May	Crop Insurance		
May	Spray Weeds	350HP-CHAL, 90' Sprayer	Rental Sprayer, 8 oz 2,4-D, 1 pt Bronate, 4 oz Excel 90
August	Harvest	30' Combine	

Machinery Costs for Reduced Tillage Dryland Grain Farm in the 15" to 18" Rainfall Zone (\$/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 Machinery Cost program using the values listed in the Machinery Complement tab.

		Fixed Costs (\$/acre):				Variable Costs (\$/acre):					Total Costs (\$/acre)
	Total Annual Usage (miles):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lub (\$/acre)	Total Cost
Trucks:											
0.75-Ton 4WD Pickup	22000	\$1.09	\$0.58	\$0.26	\$0.79	\$4.61	0.23	\$1.44	0.72	\$0.22	\$8.99
2-Ton Truck	1000	\$0.34	\$0.24	\$0.08	\$0.29	\$0.34	0.02	\$0.10	0.05	\$0.01	\$1.40
Tandem Axle Truck	2000	\$0.58	\$0.42	\$0.03	\$0.57	\$0.68	0.03	\$0.19	0.10	\$0.03	\$2.50
Trap Wagon	1000	\$0.34	\$0.19	\$0.10	\$0.11	\$0.34	0.02	\$0.13	0.07	\$0.02	\$1.23
Tractors, other equipment:											
	Total Annual Usage (hours):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lub (\$/acre)	Total Cost
4WD-ATV	200	\$0.16	\$0.08	\$0.01	\$0.03	\$1.25	0.06	\$0.19	0.09	\$0.03	\$1.75
50HP-WT	100	\$0.16	\$0.20	\$0.03	\$0.06	\$0.63	0.03	\$0.14	0.07	\$0.02	\$1.24
30' Combine	220	\$5.36	\$3.94	\$1.37	\$1.65	\$2.18	0.11	\$1.27	0.51	\$0.19	\$15.96
<i>350HP Challenger with:</i>											
35' Direct Seed Drill	160	\$2.10	\$1.52	\$0.44	\$0.62	\$1.48	0.07	\$2.06	0.82	\$0.31	\$8.53
26' Rotary Mower	65	\$1.58	\$1.30	\$0.33	\$0.82	\$1.25	0.06	\$1.74	0.70	\$0.26	\$7.28
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60

Note: Farm size is assumed to be 3500 acres for the purposes of machinery cost calculations.

Costs by Crop:

Machinery costs by operation and by crop are listed below:
Chem Fallow
Winter Wheat
Spring Barley
Hard Red Spring Wheat

Machinery Costs for Reduced Tillage Chemical Fallow in the 15" to 18" Rainfall Zone (\$/acre)

		Fixed Costs (\$/acre):				Variable Costs (\$/acre):					Total Costs (\$/acre)
	Total Annual Usage (miles):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lub (\$/acre)	Total Cost
Trucks:											
0.75-Ton 4WD Pickup	22000	\$1.09	\$0.58	\$0.26	\$0.79	\$4.61	0.23	\$1.44	0.72	\$0.22	\$8.99
2-Ton Truck	1000	\$0.34	\$0.24	\$0.08	\$0.29	\$0.34	0.02	\$0.10	0.05	\$0.01	\$1.40
Tandem Axle Truck	2000	\$0.58	\$0.42	\$0.03	\$0.57	\$0.68	0.03	\$0.19	0.10	\$0.03	\$2.50
Trap Wagon	1000	\$0.34	\$0.19	\$0.10	\$0.11	\$0.34	0.02	\$0.13	0.07	\$0.02	\$1.23
Tractors, other equipment:											
	Total Annual Usage (hours):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lub (\$/acre)	Total Cost
4WD-ATV	200	\$0.16	\$0.08	\$0.01	\$0.03	\$1.25	0.06	\$0.19	0.09	\$0.03	\$1.75
50HP-WT	100	\$0.16	\$0.20	\$0.03	\$0.06	\$0.63	0.03	\$0.14	0.07	\$0.02	\$1.24
<i>350 HP-Challenger with:</i>											
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60
Total		\$3.60	\$2.40	\$0.60	\$2.29	\$8.87	0.44	\$3.60	1.66	\$0.54	\$21.91

[Back to Costs by Crop](#)

Machinery Costs for Reduced Tillage Winter Wheat in the 15" to 18" Rainfall Zone (\$/acre)

		Fixed Costs (\$/acre):				Variable Costs (\$/acre):						Total Costs (\$/acre)
	Total Annual Usage (miles):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lub (\$/acre)	Total Cost	
Trucks:												
0.75-Ton 4WD Pickup	22000	\$1.09	\$0.58	\$0.26	\$0.79	\$4.61	0.23	\$1.44	0.72	\$0.22	\$8.99	
2-Ton Truck	1000	\$0.34	\$0.24	\$0.08	\$0.29	\$0.34	0.02	\$0.10	0.05	\$0.01	\$1.40	
Tandem Axle Truck	2000	\$0.58	\$0.42	\$0.03	\$0.57	\$0.68	0.03	\$0.19	0.10	\$0.03	\$2.50	
Trap Wagon	1000	\$0.34	\$0.19	\$0.10	\$0.11	\$0.34	0.02	\$0.13	0.07	\$0.02	\$1.23	
Tractors, other equipment:												
	Total Annual Usage (hours):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lub (\$/acre)	Total Cost	
4WD-ATV	200	\$0.16	\$0.08	\$0.01	\$0.03	\$1.25	0.06	\$0.19	0.09	\$0.03	\$1.75	
50HP-WT	100	\$0.16	\$0.20	\$0.03	\$0.06	\$0.63	0.03	\$0.14	0.07	\$0.02	\$1.24	
30' Combine	220	\$5.36	\$3.94	\$1.37	\$1.65	\$2.18	0.11	\$1.27	0.51	\$0.19	\$15.96	
<i>350 HP-Challenger with:</i>												
35' Direct Seed Drill	160	\$2.10	\$1.52	\$0.44	\$0.62	\$1.48	0.07	\$2.06	0.82	\$0.31	\$8.53	
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60	
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60	
26' Rotary Mower	65	\$1.58	\$1.30	\$0.33	\$0.82	\$1.25	\$0.06	\$1.74	\$0.70	\$0.26	\$7.28	
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60	
Total		\$12.64	\$9.16	\$2.74	\$5.38	\$13.78	0.69	\$8.67	3.69	\$1.30	\$53.68	

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Machinery Costs for Reduced Tillage Spring Barley in the 15" to 18" Rainfall Zone (\$/acre)

		Fixed Costs (\$/acre):			Variable Costs (\$/acre):						Total Costs (\$/acre)
	Total Annual Usage (miles):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lub (\$/acre)	Total Cost
Trucks:											
0.75-Ton 4WD Pickup	22000	\$1.09	\$0.58	\$0.26	\$0.79	\$4.61	0.23	\$1.44	0.72	\$0.22	\$8.99
2-Ton Truck	1000	\$0.34	\$0.24	\$0.08	\$0.29	\$0.34	0.02	\$0.10	0.05	\$0.01	\$1.40
Tandem Axle Truck	2000	\$0.58	\$0.42	\$0.03	\$0.57	\$0.68	0.03	\$0.19	0.10	\$0.03	\$2.50
Trap Wagon	1000	\$0.34	\$0.19	\$0.10	\$0.11	\$0.34	0.02	\$0.13	0.07	\$0.02	\$1.23
Tractors, other equipment:											
	Total Annual Usage (hours):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lub (\$/acre)	Total Cost
4WD-ATV	200	\$0.16	\$0.08	\$0.01	\$0.03	\$1.25	0.06	\$0.19	0.09	\$0.03	\$1.75
50HP-WT	100	\$0.16	\$0.20	\$0.03	\$0.06	\$0.63	0.03	\$0.14	0.07	\$0.02	\$1.24
30' Combine	220	\$5.36	\$3.94	\$1.37	\$1.65	\$2.18	0.11	\$1.27	0.51	\$0.19	\$15.96
<i>350 HP-Challenger with:</i>											
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60
35' Direct Seed Drill	160	\$2.10	\$1.52	\$0.44	\$0.62	\$1.48	0.07	\$2.06	0.82	\$0.31	\$8.53
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60
Total		\$11.06	\$7.86	\$2.41	\$4.56	\$12.53	0.63	\$6.93	2.99	\$1.04	\$46.40

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Machinery Costs for Reduced Tillage Hard Red Spring Wheat in the 15" to 18" Rainfall Zone (\$/acre)

		Fixed Costs (\$/acre):				Variable Costs (\$/acre):						Total Costs (\$/acre)
	Total Annual Usage (miles):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lub (\$/acre)	Total Cost	
Trucks:												
0.75-Ton 4WD Pickup	22000	\$1.09	\$0.58	\$0.26	\$0.79	\$4.61	0.23	\$1.44	0.72	\$0.22	\$8.99	
2-Ton Truck	1000	\$0.34	\$0.24	\$0.08	\$0.29	\$0.34	0.02	\$0.10	0.05	\$0.01	\$1.40	
Tandem Axle Truck	2000	\$0.58	\$0.42	\$0.03	\$0.57	\$0.68	0.03	\$0.19	0.10	\$0.03	\$2.50	
Trap Wagon	1000	\$0.34	\$0.19	\$0.10	\$0.11	\$0.34	0.02	\$0.13	0.07	\$0.02	\$1.23	
Tractors, other equipment:												
	Total Annual Usage (hours):	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Repairs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lub (\$/acre)	Total Cost	
4WD-ATV	200	\$0.16	\$0.08	\$0.01	\$0.03	\$1.25	0.06	\$0.19	0.09	\$0.03	\$1.75	
50HP-WT	100	\$0.16	\$0.20	\$0.03	\$0.06	\$0.63	0.03	\$0.14	0.07	\$0.02	\$1.24	
30' Combine	220	\$5.36	\$3.94	\$1.37	\$1.65	\$2.18	0.11	\$1.27	0.51	\$0.19	\$15.96	
<i>350 HP-Challenger with:</i>												
26' Rotary Mower	65	\$1.58	\$1.30	\$0.33	\$0.82	\$1.25	0.06	\$1.74	0.70	\$0.26	\$7.28	
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60	
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60	
35' Direct Seed Drill	160	\$2.10	\$1.52	\$0.44	\$0.62	\$1.48	0.07	\$2.06	0.82	\$0.31	\$8.53	
90' Sprayer	150	\$0.31	\$0.23	\$0.03	\$0.15	\$0.34	0.02	\$0.47	0.19	\$0.07	\$1.60	
Total		\$12.64	\$9.16	\$2.74	\$5.38	\$13.78	0.69	\$8.67	3.69	\$1.30	\$53.68	

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Machinery Complement for Reduced Tillage Dryland Grain Farm in the 15" to 18" Rainfall Zone

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
	\$				\$	\$		%		
<i>Tractors, ATVs:</i>										
4WD-ATV	6,500	0	10	200	1,000	100	1.2	1.2	1.1	
50HP-WT w/Bucket	15,000	15	20	100	3,500	200	3	1.2	1.1	
350HP Challenger	95,000	0	15	400	20,000	1,200	11	1.2	1.1	
<i>Equipment:</i>										
90' Sprayer	14,000	5	10	160	1500	1000	15	0.6	1.2	65
26' Mower	18,000	0	15	65	3000	750	15	2.5	1.2	18
72' Harrow	15,500	0	12	30	2500	550	15	0.6	1.1	52
35' Direct Seed Drill	40,000	5	10	160	10,000	1,000	15	3	1.2	15
30' Combine	225,000	5	15	220	30,000	4,000	7	2.6	1.2	11
<i>Trucks:</i>										
				Miles/year:			MPG:			
2-Ton Truck	20,000	15	15	1000	2,000	1,000	6		1.2	25
Tandem Axle Truck	35,000	15	15	2000	4,500	2,000	6	10.1	1.2	
Trap Wagon	15,000	10	10	500	3,000	400	12	3.8	1.2	20
3/4-Ton Pickup	22,000	5	7	12000	7,500	1,500	12	6.8	1.1	5