

Lind Site, Conventional Tillage & No-Till



2009 Crop Rotation Budgets for **Under 15" Precipitation Zone** Dryland Grain Producing Region of the NW Wheat & Range Region Climate Friendly Farming Project: Conventional and Reduced Tillage

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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 Cost (TC) of Operation | | | | Revenue per acre (\$/ac/yr) | Returns over TC (\$/ac/yr) | Total Variable Costs (VC) | | | Returns over VC (\$/ac/yr) | Fixed Costs (\$/ac/yr) | Labor (\$/ac/yr) | Crop & Cost Share** Operator: Owner: |
|---|------------------------------|------|----------------|-----------------|-----------------------------|----------------------------|---------------------------|------------|------------|----------------------------|------------------------|------------------|--------------------------------------|
| | (\$/ac/yr) | Unit | Yield per acre | Price* per unit | | | (\$/ac/yr) | (\$/ac/yr) | (\$/ac/yr) | | | | |
| Conv. Tillage Winter Wheat (CTWW) | \$215 | bu | 55 | \$4.99 | \$274 | \$60 | \$48 | \$227 | \$167 | \$7 | \$67 | | |
| Summer Fallow (SF) | | | | | | | \$69 | -\$69 | \$9 | \$6 | | | |
| Reduced Tillage Winter Wheat (RTWW) | \$240 | ton | 55 | \$4.99 | \$274 | \$34 | \$55 | \$220 | \$185 | \$7 | \$67 | | |
| Chemical Fallow (CF) | | | | | | | \$82 | -\$82 | \$11 | \$6 | | | |

67% Share to operator
33% Share to owner

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

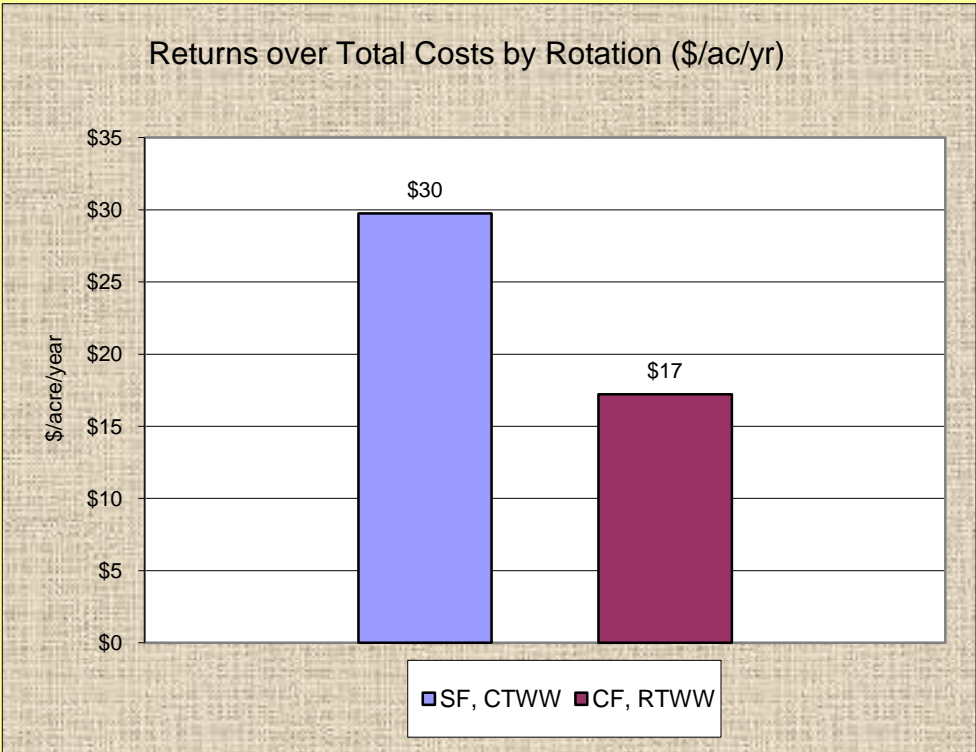
| By Rotation: | Total Cost (TC) of Operation | | | | Revenue per acre (\$/ac/yr) | Returns over TC (\$/ac/yr) | Total Variable Costs (VC) | | | Returns over VC (\$/ac/yr) | Fixed Costs (\$/ac/yr) | Labor (\$/ac/yr) | Land Payment (Cost-Share) (\$/ac/yr) |
|--------------|------------------------------|--|--|--|-----------------------------|----------------------------|---------------------------|------------|------------|----------------------------|------------------------|------------------|--------------------------------------|
| | (\$/ac/yr) | | | | | | (\$/ac/yr) | (\$/ac/yr) | (\$/ac/yr) | | | | |
| SF, CT WW | \$107 | | | | \$137 | \$30 | \$59 | \$79 | \$88 | \$7 | \$34 | | |
| CF, RT WW | \$120 | | | | \$137 | \$17 | \$69 | \$69 | \$98 | \$7 | \$33 | | |

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



Crop Price:

WW (\$/bu)

\$4.99

\$4.99

LEGEND:

CTWW: Conv. Tillage Winter Wheat

RTWW: Reduced Tillage Winter Wheat

Input Prices

| | Unit | Projected 2009 Price/unit |
|-----------------------|------|---------------------------------|
| Fuel: | | |
| Diesel | gal | \$2.25 |
| Gas | gal | \$2.75 |
| Seed: | | |
| Wheat Seed | lb | \$0.15 |
| Fertilizer: | | |
| Nitrogen | lb | \$0.52 |
| Phosphorous | lb | \$0.65 |
| Sulfur | lb | \$0.44 |
| Adjuvants: | | |
| Excel 90 | oz | \$0.20 |
| Ultra Pro | oz | \$0.02 |
| Pesticides: | | |
| 2,4-D | oz | \$0.16 |
| Glyphosphate | oz | \$0.42 |
| Maverick | oz | \$19.82 |
| Custom Rental: | | |
| 90' Rental Sprayer | acre | \$1.75 |
| Fertilizer Applicator | acre | \$1.00 |
| Cash Rent: | | |
| | acre | \$0.00 |
| Land Tax: | | |
| | acre | \$2.90 |
| Labor: | | |
| 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 |
|---|-------------------|------|--------------------|--------------------|
| Variable Costs | | | | |
| Fertilizer: | | | | \$48.92 |
| Nitrogen (anhydrous) | 71.43 | lb | \$0.52 | \$37.14 |
| Phosphorous (dry) | 10 | lb | \$0.65 | \$6.50 |
| Sulfur (dry) | 12 | lb | \$0.44 | \$5.28 |
| | | | | \$0.00 |
| Pesticides: | | | | \$0.00 |
| | | | | \$0.00 |
| | | | | \$0.00 |
| | | | | \$0.00 |
| Machinery: | | | | \$13.34 |
| Fuel | 1.80 | gal | \$2.25 | \$4.04 |
| Lubricants | 1 | acre | \$0.66 | \$0.66 |
| Machinery Repairs | 1 | acre | \$2.28 | \$2.28 |
| Machinery Labor | 0.32 | acre | \$20.00 | \$6.36 |
| | | | | \$0.00 |
| Custom & Consultants: | | | | \$1.00 |
| 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 ¹ | | | | \$3.16 |
| Operating Interest ² | | | | \$2.85 |
| Total Variable Costs | | | | \$69.28 |
| Fixed Costs: | | | | |
| Machinery depreciation | | | | \$3.21 |
| Machinery interest | | | | \$2.20 |
| Machinery insurance, taxes, housing, licenses | | | | \$0.84 |
| Land Taxes | | | | \$2.90 |
| Total Fixed Costs | | | | \$9.14 |
| Total Costs per Acre | | | | \$78.42 |

Notes:

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

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

²Calculated 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 | Cultivate | 200HP-WT 36' Cultivator | |
| April | Weed | 200HP-CT 40' Rodweeder | |
| June | Fertilize | 200HP-WT 50' Rental Anhydrous App. | Rental Fertilizer Applicator, 71.43 lb N, 10 lb P, 12 lb S |
| June | Weed | 200HP-CT 40' Rodweeder | |
| August | Weed | 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 |
|---|-------------------|------|---------------|--------------------|
| Gross Returns | | | | |
| Wheat | 55 | bu | \$4.99 | \$274.45 |
| Variable Costs | | | | |
| Seed: | | | | \$10.50 |
| Wheat Seed | 70 | lb | \$0.15 | \$10.50 |
| Fertilizer ¹ : | | | | \$0.00 |
| | | | | \$0.00 |
| Pesticides: | | | | \$8.14 |
| 2,4-D | 10 | oz | \$0.16 | \$1.60 |
| Maverick | 0.33 | oz | \$19.82 | \$6.54 |
| | | | | \$0.00 |
| Machinery: | | | | \$17.95 |
| Fuel | 1.94 | gal | \$2.25 | \$4.36 |
| 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 ² | | | | \$2.14 |
| Operating Interest ³ | | | | \$2.89 |
| Total Variable Costs | | | | \$47.87 |
| Variable Costs per Unit | | | | \$0.87 |
| Net Returns Above Variable Costs | | | | \$226.58 |

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

| Fixed Costs: | | | | |
|---|--------|------|---------|-----------------|
| Machinery depreciation | | | | \$6.20 |
| Machinery interest | | | | \$3.59 |
| Machinery taxes, housing, insurance, licenses | | | | \$1.56 |
| Summer Fallow Cost ⁴ | | | | \$85.47 |
| Land Cost* | 1 | acre | \$67.35 | \$67.35 |
| *Based on Share Rent Percentage: | | | | |
| Landlord | 33.00% | | | |
| Tenant | 67.00% | | | |
| Cash Rent | | | | \$0.00 |
| Land Taxes | | | | \$2.90 |
| Total Fixed Costs | | | | \$167.07 |
| Fixed Costs per Unit | | | | \$3.04 |
| Total Costs per Acre | | | | \$214.94 |
| Total Cost per Unit | | | | \$3.91 |
| Returns to Risk | | | | \$59.51 |

Notes:

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

¹Fertilizer is actually applied in May of the preceding year.

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

³Calculated as 7% interest on operating capital for 6 months.

⁴Summer 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 | \$0.97 | \$0.87 | \$0.79 |
| Ownership Cost Breakeven | \$3.38 | \$3.04 | \$2.76 |
| Total Cost Breakeven | \$4.34 | \$3.91 | \$3.55 |
| | - | Base | + |
| | 10% | Price | 10% |
| <u>Yield</u> | \$4.49 | \$4.99 | \$5.49 |
| Operating Cost Breakeven | 10.7 | 9.6 | 8.7 |
| Ownership Cost Breakeven | 37.2 | 33.5 | 30.4 |
| Total Cost Breakeven | 47.9 | 43.1 | 39.2 |

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

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

*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 |
|--|-------------------|------|---------------|--------------------|
| Variable Costs | | | | |
| Fertilizer: | | | | \$48.92 |
| Nitrogen (dry) | 71.43 | lb | \$0.52 | \$37.14 |
| Phosphorous (dry) | 10 | lb | \$0.65 | \$6.50 |
| Sulfur (dry) | 12 | lb | \$0.44 | \$5.28 |
| | | | | \$0.00 |
| | | | | \$0.00 |
| Pesticides: | | | | \$11.05 |
| Roundup | 22 | oz | \$0.42 | \$9.24 |
| Excel 90 | 3.2 | oz | \$0.20 | \$0.64 |
| Ultra Pro | 50 | oz | \$0.02 | \$1.17 |
| | | | | \$0.00 |
| Machinery: | | | | \$11.84 |
| Fuel | 1.67 | gal | \$2.25 | \$3.75 |
| Lubricants | 1 | acre | \$0.62 | \$0.62 |
| Machinery Repairs | 1 | acre | \$1.70 | \$1.70 |
| Machinery Labor | 0.29 | acre | \$20.00 | \$5.77 |
| | | | | \$0.00 |
| Custom & Consultants: | | | | \$2.75 |
| Rental Sprayer | 1 | acre | \$1.75 | \$1.75 |
| Rental Fertilizer Applicator | 1 | acre | \$1.00 | \$1.00 |
| Other: | | | | \$0.00 |
| Storage Facility & Equip. Repairs | | | | \$0.00 |
| Other Labor | | | | \$0.00 |
| | | | | \$0.00 |
| Overhead ² | | | | \$3.73 |
| Operating Interest ³ | | | | \$3.91 |
| Total Variable Costs | | | | \$82.21 |
| Fixed Costs: | | | | |
| Machinery depreciation | | | | \$2.10 |
| Machinery interest | | | | \$1.53 |
| Machinery insurance, taxes, housing, license | | | | \$0.73 |
| Land Taxes | | | | \$2.90 |
| Total Fixed Costs | | | | \$11.15 |
| Total Costs per Acre | | | | \$93.36 |

Notes:

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

¹Four applications of 22 oz each. See CF Calendar.

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 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 | Sweep Plow | 200HP-CT, 32' Undercutter | |
| June | Fertilize | 200HP-CT, 30' Anhydrous App. | |
| June | Rodweed | 200HP-CT, 40' Rodweeder | |

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 |
|---|----------------------|------|------------------|----------------------------|
| <u>Gross Returns</u> | | | | |
| Wheat | 55 | bu | \$4.99 | \$274.45 |
| <u>Variable Costs</u> | | | | |
| Seed: | | | | \$12.00 |
| Wheat Seed | 80 | lb | \$0.15 | \$12.00 \$0.00 |
| Fertilizer: | | | | \$0.00 |
| | | | | \$0.00 |
| Pesticides: | | | | \$9.74 |
| 2,4-D | 20 | oz | \$0.16 | \$3.20 |
| Maverick | 0.33 | oz | \$19.82 | \$6.54 \$0.00 |
| Machinery: | | | | \$19.35 |
| Fuel | 2.33 | gal | \$2.25 | \$5.24 |
| Lubricants | 1 | acre | \$0.86 | \$0.86 |
| Machinery Repairs | 1 | acre | \$5.90 | \$5.90 |
| Machinery Labor | 0.37 | acre | \$20.00 | \$7.35 \$0.00 |
| Custom & Consultants: | | | | \$3.50 |
| Rental Sprayer | 2 | acre | \$1.75 | \$3.50 \$0.00 \$0.00 |
| Other: | | | | \$4.50 |
| Crop insurance | 1 | acre | \$4.50 | \$4.50 |
| Storage Facility & Equip. Repairs | | | | \$0.00 \$0.00 |
| Overhead ¹ | | | | \$2.45 |
| Operating Interest ² | | | | \$3.31 |
| Total Variable Costs | | | | \$54.86 |
| Variable Costs per Unit | | | | \$1.00 |
| Net Returns Above Variable Costs | | | | \$219.59 |

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

| | | | | |
|--|--------|------|---------|-----------------|
| Fixed Costs: | | | | |
| Machinery depreciation | | | | \$7.51 |
| Machinery interest | | | | \$4.39 |
| Machinery insurance, taxes housing, licenses | | | | \$1.79 |
| Chemical Fallow Cost ³ | | | | \$101.76 |
| Land Cost* | 1 | acre | \$66.82 | \$66.82 |
| *Based on Share Rent Percentage: | | | | |
| Landlord | 33.00% | | | |
| Tenant | 67.00% | | | |
| Cash Rent | | | | \$0.00 |
| Land Taxes | | | | \$2.90 |
| Total Fixed Costs | | | | \$185.17 |
| Fixed Costs per Unit | | | | \$3.37 |
| Total Costs per Acre | | | | \$240.03 |
| Total Cost per Unit | | | | \$4.36 |
| Returns to Risk | | | | \$34.42 |

Notes:

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

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

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

³Chem 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 | \$1.11 | \$1.00 | \$0.91 |
| Ownership Cost Breakeven | \$3.74 | \$3.37 | \$3.06 |
| Total Cost Breakeven | \$4.85 | \$4.36 | \$3.97 |
| | - 10% | Base Price | + 10% |
| <u>Yield</u> | \$4.49 | \$4.99 | \$5.49 |
| Operating Cost Breakeven | 12.2 | 11.0 | 10.0 |
| Ownership Cost Breakeven | 41.2 | 37.1 | 33.7 |
| Total Cost Breakeven | 53.4 | 48.1 | 43.7 |

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 | 80 lb seed |
| April | Crop Insurance | | |
| April | Spray Weeds | 200HP-CT, 90' Sprayer | Rental Sprayer, 10 oz 2,4-D, 2/3 oz Maverick* |
| July | Harvest | 25' Combine 200HP-CT | |
| September | Spray Weeds | 200HP-CT, 90' Sprayer | Rental Sprayer, 10 oz 2,4-D |

*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

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 |
| Trucks: | | | | | | | | | | | |
| 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 |
| Tractors, other equipment: | | | | | | | | | | | |
| | 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 |
| <i>200HP-CT with:</i> | | | | | | | | | | | |
| 36' Direct Seed Drill | 170 | \$1.67 | \$1.12 | \$0.34 | \$1.21 | \$1.57 | 0.08 | \$1.96 | 0.78 | \$0.29 | \$8.16 |
| 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 |
| 32' Undercutter Sweep | 185 | \$0.39 | \$0.33 | \$0.03 | \$0.42 | \$0.88 | 0.04 | \$0.95 | 0.38 | \$0.14 | \$3.14 |
| 26' Chisel | 200 | \$0.36 | \$0.30 | \$0.03 | \$0.43 | \$1.52 | 0.08 | \$1.64 | 0.66 | \$0.24 | \$4.52 |
| 90' Sprayer | | \$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 |
| 50' Rental Anhydrous App. (CT) | | \$0.05 | \$0.04 | \$0.01 | \$0.10 | \$0.76 | 0.04 | \$0.75 | 0.30 | \$0.11 | \$1.82 |
| 30' Rental Anhydrous App. (RT) | | \$0.09 | \$0.07 | \$0.01 | \$0.16 | \$1.26 | 0.06 | \$1.25 | 0.50 | \$0.19 | \$3.03 |

Note: Farm size is assumed to be 5000 acres for the purpose of machinery cost calculations.

Costs by Crop:

| |
|---|
| Click on crop to see machinery costs by crop. |
| Summer Fallow |
| Conventional Tillage Winter Wheat |
| Chemical Fallow |
| Reduced Tillage Winter Wheat |

| Hourly Machinery Costs for Conventional Tillage Summer 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 |
| Trucks: | | | | | | | | | | | |
| 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 |
| Tractors, other equipment: | | | | | | | | | | | |
| | 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 |
| 50' Rental Anhydrous App | | \$0.05 | \$0.04 | \$0.01 | \$0.10 | \$0.76 | 0.04 | \$0.75 | 0.30 | \$0.11 | \$1.82 |
| <i>200HP-WT with:</i> | | | | | | | | | | | |
| 36' Cultivator | 100 | \$1.22 | \$0.79 | \$0.10 | \$0.68 | \$0.85 | 0.04 | \$0.87 | 0.35 | \$0.13 | \$4.64 |
| Total | | \$3.21 | \$2.20 | \$0.84 | \$2.28 | \$6.36 | 0.32 | \$4.49 | 1.80 | \$0.66 | \$20.03 |

[Back to Costs by Crop](#)

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 |
| Trucks: | | | | | | | | | | | |
| 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 |
| Tractors, other equipment: | | | | | | | | | | | |
| | 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 |
| 25' Disc | 220 | \$1.16 | \$0.75 | \$0.08 | \$0.45 | \$1.90 | 0.10 | \$1.73 | 0.69 | \$0.26 | \$6.33 |
| Total | | \$6.20 | \$3.59 | \$1.56 | \$5.86 | \$7.08 | 0.35 | \$4.85 | 1.94 | \$0.72 | \$29.85 |

[Back to Costs by Crop](#)

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 |
| Trucks: | | | | | | | | | | | |
| 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 |
| Tractors, other equipment: | | | | | | | | | | | |
| | 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 |
| 40' Rodweeder | 260 | \$0.17 | \$0.13 | \$0.02 | \$0.21 | \$0.76 | 0.04 | \$0.69 | 0.28 | \$0.10 | \$2.08 |
| 32' Undercutter Sweep | 185 | \$0.39 | \$0.33 | \$0.03 | \$0.42 | \$0.88 | 0.04 | \$0.95 | 0.38 | \$0.14 | \$3.14 |
| 30' Rental Anhydrous App. (RT) | | \$0.09 | \$0.07 | \$0.01 | \$0.16 | \$1.26 | 0.06 | \$1.25 | 0.50 | \$0.19 | \$3.03 |
| Total | | \$2.10 | \$1.53 | \$0.73 | \$1.70 | \$5.85 | 0.29 | \$4.17 | 1.67 | \$0.62 | \$16.69 |

[Back to Costs by Crop](#)

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 |
| Trucks: | | | | | | | | | | | |
| 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 |
| Tractors, other equipment: | | | | | | | | | | | |
| | 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 | 170 | \$1.67 | \$1.12 | \$0.34 | \$1.21 | \$1.57 | 0.08 | \$1.96 | 0.78 | \$0.29 | \$8.16 |
| 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 |
| Total | | \$7.51 | \$4.39 | \$1.79 | \$5.90 | \$7.51 | 0.37 | \$5.82 | 2.33 | \$0.86 | \$33.77 |

[Back to Costs by Crop](#)

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 |
|--|----------------------|--------------------|---------------|---------------------|------------------|---------------------------------------|---------------------|------------------------------------|------------------|----------------|
| Conventional Tillage Equipment: | | | | | | | | | | |
| 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 |
| Reduced Tillage Equipment: | | | | | | | | | | |
| 36' Direct Seed Drill | 40000 | 5 | 12 | 170 | 5000 | 2800 | 12 | 3 | 1.2 | 15 |
| 32' Undercutter Sweep | 15000 | 5 | 15 | 110 | 3000 | 750 | 12 | 0.6 | 1.1 | 23 |
| 40' Rodweeder | 15500 | 5 | 15 | 260 | 2000 | 850 | 15 | 2.6 | 1.1 | 29 |
| 26' Chisel | 12000 | 5 | 15 | 200 | 2000 | 600 | 12 | 0.6 | 1.1 | 13 |
| Tractors, Combines, ATVs: | | | | | | | | | | |
| 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 | |
| Trucks: | | | | 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: Farm size is assumed to be 5000 acres for the purpose of machinery cost calculations.