

## Finance and Economics



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# Daggett County Crop Production Costs and Returns, 2011

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## Introduction

Sample costs and returns to establish and produce alfalfa hay and grass hay under pivot irrigation in Daggett County, Utah are presented in this publication. This publication is intended to be a guide used to make production decisions, determine potential returns and prepare business and marketing plans. The practices described are not the recommendations of Utah State University, but rather the production practices and materials considered typical of a well-managed farm in the region, as determined by producer survey results from 2011. Costs, materials, and practices are not applicable to all situations as management and cultural practices vary among growers within the region. The “*Your Farm*” column in all tables is provided for your use.

**Farm.** The representative farm consists of 600 acres of land on which 70 acres are cultivated for alfalfa production, 250 acres are cultivated for grass hay production, and the remaining in rangeland. The market value in 2011 was approximately \$1,300 per acre for agricultural land in Daggett County with water rights.

**Crop Pricing.** Five-year average pricing (2006-2010) for alfalfa hay is \$125/ton and for all other hay \$104/ton (UDAF, 2011).

**Owner Labor.** The owner is provided \$24,000 annually for the 320 acres under production, or \$75/acre.

**Hired Labor.** Hired labor is paid \$12/hr at an annual expense of \$12,000 for the 320 acres under production, or \$37.50/acre.



**Irrigation System.** The pivot system including pump is estimated at \$100,000 for each 125 acres. The farm has 2.5 pivots for a total value of \$250,000 (Valley Irrigation Company, December 2011).

**Cash Overhead.** Cash overhead consists of various cash expenses paid out during the year. These costs include property taxes, interest, office expenses, liability and property insurance, accounting/legal costs, as well as investment/machinery repairs.

**Property Taxes.** Property taxes in Utah differ across counties. For the purposes of this publication, property taxes on buildings are calculated at 1 percent of the average asset value of the property. Property taxes on land should be taken into consideration, but are not included here.

**Insurance.** Insurance on farm investments vary, depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss at .666 percent of the average asset value. Liability and crop insurance covers accidents and crop loss on the 600 acre farm at an annual cost of \$3,500.

**Fuel and Lube.** The fuel and lube for machinery and vehicles is calculated at 8 percent of the average asset value.

**Investment Repairs.** Annual repairs on all farm investments or capital recovery items that require maintenance are calculated at 2 percent of the average asset value for buildings, improvements, and equipment and 7 percent of the average asset value for machinery and vehicles.

**Office & Travel.** Office and travel costs are estimated at \$2,000 for an average year for the 600 acre farm. These expenses include office supplies, telephone service, Internet service, and travel expenses to educational seminars.

**Accounting & Legal.** Annual accounting and legal costs are estimated at \$1,200 for an average year for the 600 acre farm.

**Capital Recovery.** Capital recovery costs are the annual depreciation (opportunity cost) of all farm investments. Capital recovery costs are calculated using straight line depreciation. All equipment listed is new unless otherwise noted. For used machinery the price is

calculated as one-half of the new purchase price and useful life is two-thirds that of new machinery (Painter, 2011)

**Salvage Value.** Salvage value is 10 percent of the purchase price, which is an estimate of the remaining value of an investment at the end of its useful life. The salvage value for land is the purchase price, as land does not normally depreciate.

#### **Average Asset Value Computation**

$$\left( \frac{\text{Purchase Price} + \text{Salvage Value}}{2} \right)$$

#### **Straight Line Depreciation Computation**

$$\left( \frac{\text{Purchase Price} - \text{Salvage Value}}{\text{Useful Life}} \right)$$

#### **References**

- Painter, Kathleen (2011). The Costs of Owning and Operating Farm Machinery in the Pacific Northwest 2011. A Pacific Northwest Publication #346. University of Idaho, Washington State University, and Oregon State University.
- Utah Department of Agriculture and Food (2011). 2011 Utah Agriculture Statistics and Utah Department of Agriculture and Food Annual Report.

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**Table 1: Daggett County Alfalfa Hay Establishment Costs, 70 acres, 2011.**

	Total Units	Unit	Price/Cost Per Unit	Total Cost/Value	Total Cost/Value Per Acre	Your Farm
<b>OPERATING COSTS</b>						
Insecticide	70.00	Acre	\$ -	\$ -	\$ -	_____
Herbicide	70.00	Acre	\$ -	\$ -	\$ -	_____
Fertilizer	70.00	Acre	\$ 70.00	\$ 4,900.00	\$ 70.00	_____
Testing (Soil & Forage)	1.00	Annual	\$ 250.00	\$ 250.00	\$ 3.57	_____
Irrigation	1.00	Annual	\$ 400.00	\$ 400.00	\$ 5.71	_____
Alfalfa Seed	70.00	Acre	\$ 65.00	\$ 4,550.00	\$ 65.00	_____
Custom Harvest	70.00	Acre	\$ 44.00	\$ 3,080.00	\$ 44.00	_____
Labor	70.00	Acre	\$ 37.50	\$ 2,625.00	\$ 37.50	_____
Operator Labor	70.00	Acre	\$ 75.00	\$ 5,250.00	\$ 75.00	_____
Fuel & Lube	1.00	Annual	\$ 1,278.64	\$ 1,278.64	\$ 18.27	_____
Maintenance	1.00	Annual	\$ 1,787.61	\$ 1,787.61	\$ 25.54	_____
Miscellaneous	70.00	Acre	\$ 5.00	\$ 350.00	\$ 5.00	_____
<b>TOTAL OPERATING COSTS</b>				\$ 24,471.25	\$ 349.59	
<b>OWNERSHIP COSTS</b>						
<b>CASH OVERHEAD COSTS</b>						
Liability/Crop Insurance				\$ 770.00	\$ 11.00	_____
Accounting & Legal				\$ 264.00	\$ 3.77	_____
Office & Travel				\$ 440.00	\$ 6.29	_____
Annual Investment Insurance				\$ 329.16	\$ 4.70	_____
Annual Investment Taxes				\$ 42.90	\$ 0.61	_____
<b>TOTAL CASH OVERHEAD COSTS</b>				\$ 1,846.06	\$ 26.37	
<b>NONCASH OVERHEAD COSTS (Capital Recovery)</b>						
Buildings, Improvements, & Equipment				\$ 2,155.50	\$ 30.79	_____
Machinery & Vehicles				\$ 3,416.40	\$ 48.81	_____
<b>TOTAL NONCASH OVERHEAD COSTS</b>				\$ 5,571.90	\$ 79.60	
<b>TOTAL OWNERSHIP COSTS</b>				\$ 7,417.96	\$ 105.97	
<b>TOTAL COSTS</b>				\$ 31,889.21	\$ 455.56	
<b>YEAR ONE INCOME</b>						
Alfalfa Hay	3.00	Tons	\$ 125.00	\$ 26,250.00	\$ 375.00	_____
<b>TOTAL GROSS INCOME</b>				\$ 26,250.00	\$ 375.00	
<b>TOTAL ESTABLISHMENT INVESTMENT</b>				\$ 5,639.21	\$ 80.56	

**Table 2: Daggett County Alfalfa Hay Production Costs and Returns, 70 acres, 2011.**

	Total Units	Unit	Price/Cost Per Unit	Total Cost/Value	Total Cost/Value Per Acre	Your Farm
<b>GROSS INCOME</b>						
Alfalfa Hay	3.50	Tons	\$ 125.00	\$ 30,625.00	\$ 437.50	_____
<b>TOTAL GROSS INCOME</b>				\$ 30,625.00	\$ 437.50	
<b>OPERATING COSTS</b>						
Insecticide	70.00	Acre	\$ -	\$ -	\$ -	_____
Herbicide	70.00	Acre	\$ -	\$ -	\$ -	_____
Fertilizer	70.00	Acre	\$ 70.00	\$ 4,900.00	\$ 70.00	_____
Testing (Soil & Forage)	1.00	Annual	\$ 250.00	\$ 250.00	\$ 3.57	_____
Irrigation	1.00	Annual	\$ 400.00	\$ 400.00	\$ 5.71	_____
Custom Harvest	70.00	Acre	\$ 44.00	\$ 3,080.00	\$ 44.00	_____
Labor	70.00	Acre	\$ 37.50	\$ 2,625.00	\$ 37.50	_____
Operator Labor	70.00	Acre	\$ 75.00	\$ 5,250.00	\$ 75.00	_____
Fuel & Lube	1.00	Annual	\$ 1,278.64	\$ 1,278.64	\$ 18.27	_____
Maintenance	1.00	Annual	\$ 1,787.61	\$ 1,787.61	\$ 25.54	_____
Miscellaneous	70.00	Acre	\$ 5.00	\$ 350.00	\$ 5.00	_____
<b>TOTAL OPERATING COSTS</b>				\$ 19,921.25	\$ 284.59	
<b>INCOME ABOVE OPERATING COSTS</b>				\$ 10,703.75	\$ 152.91	
<b>OWNERSHIP COSTS</b>						
<b>CASH OVERHEAD COSTS</b>						
Liability/Crop Insurance				\$ 770.00	\$ 11.00	_____
Accounting & Legal				\$ 264.00	\$ 3.77	_____
Office & Travel				\$ 440.00	\$ 6.29	_____
Annual Investment Insurance				\$ 329.16	\$ 4.70	_____
Annual Investment Taxes				\$ 42.90	\$ 0.61	_____
<b>TOTAL CASH OVERHEAD COSTS</b>				\$ 1,846.06	\$ 26.37	
<b>NONCASH OVERHEAD COSTS (Capital Recovery)</b>						
Buildings, Improvements, & Equipment				\$ 3,095.37	\$ 44.22	_____
Machinery & Vehicles				\$ 3,416.40	\$ 48.81	_____
<b>TOTAL NONCASH OVERHEAD COSTS</b>				\$ 6,511.77	\$ 93.03	
<b>TOTAL OWNERSHIP COSTS</b>				\$ 8,357.83	\$ 119.40	
<b>TOTAL COSTS</b>				\$ 28,279.08	\$ 403.99	
<b>NET PROJECTED RETURNS</b>				\$ 2,345.92	\$ 33.51	

**Table 3: Alfalfa Production Investment Summary.**

Description	Purchase Price	Percentage Use	Purchase Price	Useful Life (Yrs)	Salvage Value	Annual Capital Recovery	Annual Insurance	Annual Taxes	Annual Repairs	Annual Fuel & Lube
<b>Buildings, Improvements, and Equipment</b>										
Land	\$ 780,000.00	12%	\$ 93,600.00	150.00	\$ 93,600.00	\$ -	\$ -	TBD	\$ -	\$ -
Machine Shop (20x60)	\$ 10,000.00	12%	\$ 1,200.00	40.00	\$ 120.00	\$ 27.00	\$ 4.40	\$ 6.60	\$ 13.20	\$ -
Hay Barn (100X70)	\$ 30,000.00	22%	\$ 6,600.00	40.00	\$ 660.00	\$ 148.50	\$ 24.18	\$ 36.30	\$ 72.60	\$ -
Irrigation System (Pivot)	\$ 50,000.00	100%	\$ 50,000.00	25.00	\$ 5,000.00	\$ 1,800.00	\$ 183.15	\$ -	\$ 550.00	\$ -
Implements	\$ 25,000.00	12%	\$ 3,000.00	15.00	\$ 300.00	\$ 180.00	\$ 10.99	\$ -	\$ 33.00	\$ -
Alfalfa Establishment	\$ 5,639.21	100%	\$ 5,639.21	6.00	\$ -	\$ 939.87	\$ -	\$ -	\$ -	\$ -
Sub Total Pre-Establishment	\$ 895,000.00		\$ 154,400.00		\$ 99,680.00	\$ 2,155.50	\$ 222.71	\$ 42.90	\$ 668.80	\$ -
Sub Total Post-Establishment	\$ 900,639.21		\$ 160,039.21		\$ 99,680.00	\$ 3,095.37	\$ 222.71	\$ 42.90	\$ 668.80	\$ -
<b>Machinery and Vehicles</b>										
125 HP Tractor (used)	\$ 46,000.00	12%	\$ 5,520.00	10.00	\$ 552.00	\$ 496.80	\$ 20.22	\$ -	\$ 212.52	\$ 242.88
95 HP Tractor (used)	\$ 31,000.00	12%	\$ 3,720.00	10.00	\$ 372.00	\$ 334.80	\$ 13.63	\$ -	\$ 143.22	\$ 163.68
85 HP Tractor (used)	\$ 26,000.00	12%	\$ 3,120.00	10.00	\$ 312.00	\$ 280.80	\$ 11.43	\$ -	\$ 120.12	\$ 137.28
2 Ton Flatbed (used)	\$ 15,000.00	12%	\$ 1,800.00	10.00	\$ 180.00	\$ 162.00	\$ 6.59	\$ -	\$ 69.30	\$ 79.20
Swather (used)	\$ 35,000.00	22%	\$ 7,700.00	7.00	\$ 770.00	\$ 990.00	\$ 28.21	\$ -	\$ 296.45	\$ 338.80
4-Wheeler (2)	\$ 20,000.00	12%	\$ 2,400.00	5.00	\$ 240.00	\$ 432.00	\$ 8.79	\$ -	\$ 92.40	\$ 105.60
3/4 Ton Pickup	\$ 40,000.00	12%	\$ 4,800.00	6.00	\$ 480.00	\$ 720.00	\$ 17.58	\$ -	\$ 184.80	\$ 211.20
Sub Total			\$ 29,060.00		\$ 2,906.00	\$ 3,416.40	\$ 106.45	\$ -	\$ 1,118.81	\$ 1,278.64
<b>Total</b>			<b>\$ 189,099.21</b>		<b>\$ 102,586.00</b>	<b>\$ 6,511.77</b>	<b>\$ 329.16</b>	<b>\$ 42.90</b>	<b>\$ 1,787.61</b>	<b>\$ 1,278.64</b>

**Table 4: Daggett County Grass Hay Production Costs and Returns, 250 acres, 2011.**

	Total Units	Unit	Price/Cost Per Unit	Total Cost/Value	Total Cost/Value Per Acre	Your Farm
<b>GROSS INCOME</b>						
Grass Hay	3.00	Ton	\$ 104.00	\$ 78,000.00	\$ 312.00	_____
<b>TOTAL GROSS INCOME</b>				\$ 78,000.00	\$ 312.00	
<b>OPERATING COSTS</b>						
Insecticide	250.00	Acre	\$ -	\$ -	\$ -	_____
Herbicide	250.00	Acre	\$ -	\$ -	\$ -	_____
Fertilizer	250.00	Acre	\$ -	\$ -	\$ -	_____
Seed	250.00	Acre	\$ -	\$ -	\$ -	_____
Irrigation	1.00	Annual	\$ 1,404.00	\$ 1,404.00	\$ 5.62	_____
Custom Harvest	250.00	Acre	\$ 44.00	\$ 11,000.00	\$ 44.00	_____
Labor	250.00	Acre	\$ 37.50	\$ 9,375.00	\$ 37.50	_____
Operator Labor	250.00	Acre	\$ 75.00	\$ 18,750.00	\$ 75.00	_____
Fuel & Lube	1.00	Annual	\$ 4,490.64	\$ 4,490.64	\$ 17.96	_____
Maintenance	1.00	Annual	\$ 6,548.41	\$ 6,548.41	\$ 26.19	_____
Miscellaneous	100.00	Acre	\$ 5.00	\$ 500.00	\$ 2.00	_____
<b>TOTAL OPERATING COSTS</b>				\$ 52,068.05	\$ 208.27	
<b>INCOME ABOVE OPERATING COSTS</b>				\$ 25,931.95	\$ 103.73	
<b>OWNERSHIP COSTS</b>						
<b>CASH OVERHEAD COSTS</b>						
Liability/Crop Insurance				\$ 1,470.00	\$ 5.88	_____
Accounting & Legal				\$ 504.00	\$ 2.02	_____
Office & Travel				\$ 840.00	\$ 3.36	_____
Annual Investment Insurance				\$ 1,246.01	\$ 4.98	_____
Annual Investment Taxes				\$ 151.80	\$ 0.61	_____
<b>TOTAL CASH OVERHEAD COSTS</b>				\$ 4,211.81	\$ 16.85	
<b>NONCASH OVERHEAD COSTS (Capital Recovery)</b>						
Buildings, Improvements, & Equipment				\$ 8,451.00	\$ 33.80	_____
Machinery & Vehicles				\$ 12,002.40	\$ 48.01	_____
<b>TOTAL NONCASH OVERHEAD COSTS</b>				\$ 20,453.40	\$ 81.81	
<b>TOTAL OWNERSHIP COSTS</b>				\$ 24,665.21	\$ 98.66	
<b>TOTAL COSTS</b>				\$ 76,733.26	\$ 306.93	
<b>NET PROJECTED RETURNS</b>				\$ 1,266.74	\$ 5.07	

**Table 5: Grass Hay Production Investment Summary.**

Description	Purchase Price	Percentage Use	Purchase Price	Useful Life (Yrs)	Salvage Value	Annual Capital Recovery	Annual Insurance	Annual Taxes	Annual Repairs	Annual Fuel & Lube
<b>Buildings, Improvements, and Equipment</b>										
Land	\$ 780,000.00	42%	\$ 327,600.00	150.00	\$ 327,600.00	\$ -	\$ -	TBD	\$ -	\$ -
Machine Shop (20x60)	\$ 10,000.00	42%	\$ 4,200.00	40.00	\$ 420.00	\$ 94.50	\$ 15.38	\$ 23.10	\$ 46.20	\$ -
Hay Barn (100X70)	\$ 30,000.00	78%	\$ 23,400.00	40.00	\$ 2,340.00	\$ 526.50	\$ 85.71	\$ 128.70	\$ 257.40	\$ -
Irrigation System (Pivot)	\$ 200,000.00	100%	\$ 200,000.00	25.00	\$ 20,000.00	\$ 7,200.00	\$ 732.60	\$ -	\$ 2,200.00	\$ -
Implements	\$ 25,000.00	42%	\$ 10,500.00	15.00	\$ 1,050.00	\$ 630.00	\$ 38.46	\$ -	\$ 115.50	\$ -
Sub Total			\$ 355,200.00	NA	\$ 351,410.00	\$ 8,451.00	\$ 872.16	\$ 151.80	\$ 2,619.10	\$ -
<b>Machinery and Vehicles</b>										
125 HP Tractor (used)	\$ 46,000.00	42%	\$ 19,320.00	10.00	\$ 1,932.00	\$ 1,738.80	\$ 70.77	\$ -	\$ 743.82	\$ 850.08
95 HP Tractor (used)	\$ 31,000.00	42%	\$ 13,020.00	10.00	\$ 1,302.00	\$ 1,171.80	\$ 47.69	\$ -	\$ 501.27	\$ 572.88
85 HP Tractor (used)	\$ 26,000.00	42%	\$ 10,920.00	10.00	\$ 1,092.00	\$ 982.80	\$ 40.00	\$ -	\$ 420.42	\$ 480.48
2 Ton Flatbed (used)	\$ 15,000.00	42%	\$ 6,300.00	10.00	\$ 630.00	\$ 567.00	\$ 23.08	\$ -	\$ 242.55	\$ 277.20
Swather (used)	\$ 35,000.00	78%	\$ 27,300.00	7.00	\$ 2,730.00	\$ 3,510.00	\$ 100.00	\$ -	\$ 1,051.05	\$ 1,201.20
4-Wheeler (2)	\$ 20,000.00	42%	\$ 8,400.00	5.00	\$ 840.00	\$ 1,512.00	\$ 30.77	\$ -	\$ 323.40	\$ 369.60
3/4 Ton Pickup	\$ 40,000.00	42%	\$ 16,800.00	6.00	\$ 1,680.00	\$ 2,520.00	\$ 61.54	\$ -	\$ 646.80	\$ 739.20
Sub Total			\$ 102,060.00	NA	\$ 10,206.00	\$ 12,002.40	\$ 373.85	\$ -	\$ 3,929.31	\$ 4,490.64
<b>Total</b>			<b>\$ 457,260.00</b>	<b>NA</b>	<b>\$ 361,616.00</b>	<b>\$ 20,453.40</b>	<b>\$ 1,246.01</b>	<b>\$ 151.80</b>	<b>\$ 6,548.41</b>	<b>\$ 4,490.64</b>