

**2007**

**UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION**

**SAMPLE COSTS TO PRODUCE**

***GRAIN HAY***



**INTERMOUNTAIN REGION  
SISKIYOU COUNTY – 2007**

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 SISKIYOU COUNTY – 2007

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**INTRODUCTION**

The detailed costs for grain hay production in Siskiyou County located in the Intermountain Region in California are presented in this study. The hypothetical farm used in this report consists of 640 acres with 433 acres of alfalfa hay stands, 62 acres of grain hay production, and 20 acres dedicated to roads, buildings, and unused land.

This study consists of Assumptions to Produce Grain Hay and is intended as a guide only. It can be used to make production decisions, determine potential returns, prepare budgets, and evaluate production loans. Practices described are based on the production practices considered typical for this crop and region. Sample costs for labor, materials, equipment, and custom services are based on current figures. “*Your Costs*” columns in Table 1 Costs per Acre to Produce Grain Hay and Table 2 Costs and Returns per Acre to Produce Grain Hay are for you to insert your actual production costs.

The hypothetical farm operations, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, California, 530-752-2414 or the local UC Cooperative Extension office.

Sample Cost of Production Studies for many commodities can be downloaded at <http://coststudies.ucdavis.edu>, requested through the Department of Agricultural and Resource Economics, UC Davis, 530-752-1517 or obtained from the local county UC Cooperative Extension offices. Some archived studies are also available on the website.

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## ASSUMPTIONS

The following assumptions pertain to sample costs to produce grain hay in Siskiyou County in the Intermountain Region. The costs are based on the cultural practices used by growers in the region, some of which may not be used during every year. The cultural practices and production inputs for growing grain hay vary considerably amongst growers and fields. Costs are represented on an annual, per acre basis. The use of trade names in this report does not constitute an endorsement or recommendation by the University of California, nor is any criticism implied by omission of other similar products.

**Land Costs.** The study is based on a 640 acre field crop farm that produces grain and alfalfa hay and other forage crops. Grain hay is planted on 62 acres. Farming practices can vary among fields. Owned land includes developed wells and a mix of center pivot and wheel-line irrigation systems. All cost associated with investments and the irrigation system is incurred by the landowner.

The 62 acres owned land used for growing grain hays is rotated with alfalfa. Operations for this crop begin in the spring. Owned land used to grow the grain hay is considered a non-cash overhead cost. The farm buildings, roads and homestead occupy 20 of the 640 acres. In this study land is valued at \$2,050 per acre or \$2,116 per producing acre.

## CULTURAL PRACTICES AND MATERIAL INPUTS

**Land Preparation.** Grain hay is often planted after alfalfa. The alfalfa is removed in the fall with a plow. The fields are then disced twice in the spring to prepare a seedbed. If grain is planted following another grain crop, plowing is not necessary.

**Planting.** Several different types of small grains are planted to produce grain hay. The type planted depends on the grower, whose decision is influenced by the time of seeding, the end use of the forage and market conditions. Winter and spring varieties of barley, wheat, and triticale, and spring varieties of oats are all planted. Awnless (commonly called beardless) varieties are normally produced. A seeding rate of 100 pounds per acre is assumed in this study. Small grains can be fall or spring seeded and a March seeding is assumed in this study. The crop is seeded using a standard grain drill.

**Fertilization.** In February prior to planting, nitrogen (N) as ammonia sulfate (21-0-0-24) is applied into the ground at a rate of 80 pounds of N per acre. A higher rate is used if grain hay follows a crop other than alfalfa.

**Irrigation:** Water is applied through a wheel-line sprinkler system. The amount of water applied varies considerably depending on spring rainfall. A total of 7.5 acre-inches of water is applied in three irrigations over the months of April, May, and June.

**Pest Management.** The pesticides, rates, and application practices mentioned in this cost study are listed in the *UC IPM Pest Management Guidelines for Small Grains*. Pesticides mentioned in this study are not recommendations, but those commonly used in the region. For information and pesticide use permits, contact the local county Agricultural Commissioner's office. For information on other pesticides available, pest identification, monitoring, and management, visit the UC IPM website at [www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu). Pest control costs can vary considerably each year depending upon conditions

and pest populations in any given year. Pesticide costs will vary by grower location and the grower's purchasing volume or use. Material costs are shown at full retail from a single chemical dealer or *Pest Control Adviser (PCA)*. Written recommendations are required for many commercially applied pesticides and are available from licensed pest control advisers. Growers may hire private PCA's or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. PCA costs are not shown in this study.

**Weeds.** 2, 4-D is applied to control broadleaf weeds in May when weeds are still small. MCPA is also commonly used in areas of the Intermountain Region. The herbicide is custom applied.

**Harvest.** Harvest equipment owned by the farm consists of a self-propelled swather, center-delivery rake, a self-propelled balewagon (harrowbed), an engine driven, pull-type baler and a hay squeeze. The grain is cut with the self-propelled swather, cured or dried in windrows for several days and then turned and two windrows are combined into one using a center-delivery rake. When dried to the correct moisture, the hay is baled with a pull-type baler. The balewagon picks up the bales and moves them from the field to stacks. A hay squeeze is used to load stacked bales onto semi trailers. The costs for these operations are shown in Tables 1, 2, and 3 and the equipment is listed in Tables 4 and 5. If a grower has their hay custom harvested, replace the harvest costs with the custom harvest charges.

Many factors are important in deciding which harvesting option a grower uses. The options are discussed in *"Acquiring Alfalfa Hay Harvest Equipment: A Financial Analysis of Alternatives"*. The publication can be found at <http://giannini.ucop.edu/InfoSeries/921-HayEquip.pdf>.

**Yields.** The crop is assumed to yield 4.5 tons per acre with the range of yields normally falling between 3 to 6 tons per acre. The average yields and return prices based on Siskiyou County Agricultural Commissioner's data for the period 2001–05 are shown in Table A. These data represent both dryland and irrigated fields and, therefore, are lower than the yields assumed to be achievable in this study. Grower yields will vary depending on the grain, variety, soil, and growing conditions.

Table A. Other hay statistics for the Siskiyou County <sup>§</sup>

Year	Acres	Yield	Tons	\$/Ton	Value (\$)
2005	12,315	3.50	43,102	85.00	3,663,712
2004	18,000	2.75	49,500	75.00	3,712,500
2003	17,500	2.50	43,750	70.00	3,062,500
2002	17,830	2.25	40,118	70.00	2,808,300
2001	17,830	1.80	32,094	80.00	2,567,500
<b>Avg.</b>	<b>16,695</b>	<b>2.56</b>	<b>41,713</b>	<b>76.00</b>	<b>3,162,902</b>

<sup>§</sup> Siskiyou County Agricultural Commissioner's Annual Crop Report, 2001 – 2005.

**Returns.** A price of \$90 per ton for hay is used to calculate returns above several cost levels. Table 6 indicates the effects on grower returns based on varying yields and returns. The average price for the five-year period in Table A is \$76 per ton.

**Labor.** Basic hourly wages for workers are \$9.00 per hour for machine and \$7.50 per hour for non-machine (field worker) labor. Adding 48% for the employer's share of federal and state payroll taxes, insurance, and other benefits increases the labor rates to \$13.32 per hour for machine and \$11.10 per hour for non-machine labor. The labor for operations involving machinery are 20% higher than the operation time to account for the extra labor involved in equipment set up, moving, maintenance and repair. The current minimum wage is \$7.50 per hour. On January 1, 2008 it will increase to \$8.00 per

hour. The farm manager in the Intermountain Region is often the owner operator and receives income after total costs have been deducted from gross income.

*Equipment Operating Costs.* Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum Power-Take-Off (PTO) horsepower, and fuel type.

Prices for on-farm delivery of diesel and gasoline are \$2.30 and \$2.80 per gallon, respectively. Costs are based on current delivery prices quoted by distributors and 2007 monthly price data. The cost includes a 2% local sales tax on diesel fuel and 8% sales tax on gasoline. Gasoline also includes federal and state excise taxes that are refundable for on-farm use when filing income tax return.

The fuel, lube, and repair cost per acre for each operation in Table 1, and 2 is determined by multiplying the total hourly operating cost in Table 5 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

**Risk.** Production risks should not be minimized. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks, which affect the profitability and economic viability of grain hay production.

## CASH OVERHEAD

*Property Tax.* Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by 2 on a per acre basis. Salvage value for investments will vary.

*Interest on Operating Capital.* Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 10.00% per year. A nominal interest rate is the going market cost of borrowed funds.

*Insurance.* Insurance for farm investments varies depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.714% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,013 for the entire farm or \$1.57 per acre.

*Office Expense.* Various farm and office expenses are estimated at \$6.20 per acre for the ranch. These expenses include office supplies, utilities, telephones, bookkeeping, accounting, legal fees and maintenance, etc.

## NON-CASH OVERHEAD

**Investment.** The investments shown in Table 6 are those that are partially or completely allocated to the grain hay operation. Costs of investments such as tractors, trucks, buildings, etc. can be spread over the whole farm. Annual investments shown in Tables 1 and 3 represent depreciation and opportunity cost for each investment on an annual per acre basis.

*Capital Recovery.* Capital recovery cost is calculated for equipment and other farm investments. Although farm equipment used on forage crop farms might be purchased new or used, this study shows the current purchase price for new equipment. The new purchase price is adjusted to 40% to indicate a mix of new and used equipment. Annual ownership costs (Equipment and Investments) are shown in Tables 1-3, and 5. They represent the capital recovery cost for investments on an annual per acre basis.

Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase prices and salvage value (unrecovered capital). Put another way, it is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The calculation for the annual capital recovery costs is as follows.

$$\left[ \left( \begin{matrix} \text{Purchase} \\ \text{Price} \end{matrix} - \begin{matrix} \text{Salvage} \\ \text{Value} \end{matrix} \right) \times \left( \begin{matrix} \text{Capital} \\ \text{Recovery} \\ \text{Factor} \end{matrix} \right) \right] + \left[ \begin{matrix} \text{Salvage} \\ \text{Value} \end{matrix} \times \begin{matrix} \text{Interest} \\ \text{Rate} \end{matrix} \right]$$

*Salvage Value.* Salvage value is an estimate of the remaining value of an investment at the end of its life. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The life in years is estimated by dividing the wear-out life, as given by American Society of Agricultural Engineers (ASAE) by the annual use in hours. Salvage value is calculated as

$$\text{New Price} \times \% \text{ Remaining Value}$$

Salvage value for other investments including irrigation systems, buildings, and miscellaneous equipment is zero. The salvage value for land is equal to the purchase price because land does not depreciate from use. The purchase price and salvage value for certain equipment and investments are shown in Table 4.

*Capital Recovery Factor.* Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. It is the function of the interest rate and years of life of the equipment.

*Interest Rate.* The interest rate of 7.25% used to calculate capital recovery cost and will vary depending upon size of loan and other lending agency conditions, but is a suggested rate by a farm lending agency in January 2006. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector. In other words, the next best alternative use for these resources is in another agricultural enterprise.

*Non-Cash Equipment Costs.* Much of the equipment inventory on a typical alfalfa/grain hay farm in Siskiyou County has many years of use which reduces its value. This study shows current purchase prices for new equipment with an adjustment of 40% of new value to indicate a mix of new and used equipment.

**Table Values.** Due to rounding, the totals may be slightly different from the sum of the components.

**Acknowledgment.** Appreciation is expressed to those growers and other cooperators who provided support for this study.

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For information concerning the above mentioned University of California publications contact UC DANR Communications Services (1-800-994-8849) or your local county Cooperative Extension office.

Table 1.

U.C. COOPERATIVE EXTENSION  
COST PER ACRE TO PRODUCE GRAIN HAY  
INTERMOUNTAIN REGION  
SISKIYOU COUNTY - 2007

Labor Rate: \$13.32/hr. machine labor  
\$11.10/hr. non-machine labor

Short Term Interest Rate: 10.00%

Operation	Cash and Labor Costs per Acre						Your Cost
	Operation Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/Rent	Total Cost	
<b>Cultural:</b>							
Plow Alfalfa Stand	0.35	6	10	0	0	15	
Fertilize: Ammonium Sulfate	0.00	0	0	43	6	49	
Finish Disc 2X	0.22	3	6	0	0	9	
Plant Grain @ 100 Lbs/Acre	0.15	2	4	13	0	20	
Irrigate 3X	0.80	9	0	13	0	22	
Weed Control - Broadleaf Spray	0.00	0	0	4	6	9	
Pickup Truck Use	<u>0.46</u>	<u>7</u>	<u>5</u>	<u>0</u>	<u>0</u>	<u>13</u>	
<b>TOTAL CULTURAL COSTS</b>	<b>1.97</b>	<b>28</b>	<b>25</b>	<b>73</b>	<b>11</b>	<b>137</b>	
<b>Harvest:</b>							
Swath Hay	0.17	3	1	0	0	3	
Rake Hay	0.11	2	1	0	0	3	
Bale Hay	0.13	2	2	4	0	8	
Roadside Hay	0.13	2	5	0	0	7	
Load Hay	<u>0.09</u>	<u>1</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>3</u>	
<b>TOTAL HARVEST COSTS</b>	<b>0.62</b>	<b>10</b>	<b>11</b>	<b>4</b>	<b>0</b>	<b>25</b>	
Interest on Operating Capital @ 10.00%						6	
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>37</b>	<b>36</b>	<b>77</b>	<b>11</b>	<b>168</b>	
<b>CASH OVERHEAD:</b>							
Office Expense						6	
Liability Insurance						2	
Property Taxes						24	
Property Insurance						17	
Investment Repairs						<u>9</u>	
<b>TOTAL CASH OVERHEAD COSTS</b>						<b>57</b>	
<b>TOTAL CASH COSTS/ACRE</b>						<b>226</b>	
<b>NON-CASH OVERHEAD:</b>							
Investment		Per producing		-- Annual Cost --			
Land		<u>Acres</u>		<u>Capital Recovery</u>			
		2050		149		149	
Fuel Tanks & Pumps		15		1		1	
Shop Building		72		6		6	
Shop Tools		18		2		2	
Wheel Line Sprinkler System		117		11		11	
Hay Barn		156		15		15	
Equipment		<u>175</u>		<u>21</u>		<u>21</u>	
<b>TOTAL NON-CASH OVERHEAD COSTS</b>		<b>2603</b>		<b>205</b>		<b>205</b>	
<b>TOTAL COSTS/ACRE</b>						<b>431</b>	



Table 2.

U.C. COOPERATIVE EXTENSION  
 COST AND RETURNS PER ACRE TO PRODUCE GRAIN HAY  
 INTERMOUNTAIN REGION  
 SISKIYOU COUNTY - 2007

Labor Rate: \$13.32/hr. machine labor  
 \$11.10/hr. non-machine labor

Short Term Interest Rate: 10.00%

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>GROSS RETURNS</b>					
Grain Hay	4.50	Tons	90	<u>405</u>	
<b>TOTAL GROSS RETURNS FOR GRAIN HAY</b>				<u>405</u>	
<b>OPERATING COSTS</b>					
Custom:					
Ground Application - Fertilizer	1.00	Acre	5.50	6	
Ground Application - Herbicide	1.00	Acre	5.50	6	
Fertilizer:					
21-0-0-24	80.00	Lb N	0.54	43	
Seed:					
Seed - Wheat	100.00	Lb	0.13	13	
Irrigation:					
Water	7.50	AcIn	1.77	13	
Herbicide:					
2,4-D	1.50	Pint	2.50	4	
Harvest Aid:					
Hay Bale Twine	4.50	Ton	0.02	0	
Labor (machine)	2.15	hrs	13.30	29	
Labor (non-machine)	0.80	hrs	11.10	9	
Fuel - Gas	1.38	gal	2.80	5	
Fuel - Diesel	8.15	gal	2.30	19	
Lube				3	
Machinery repair				13	
Interest on Operating Capital @ 10.00%				<u>6</u>	
<b>TOTAL OPERATING COSTS/ACRE</b>				<u>168</u>	
<b>NET RETURNS ABOVE OPERATING COSTS</b>				<u>237</u>	
<b>CASH OVERHEAD COSTS:</b>					
Office Expense				6	
Liability Insurance				2	
Property Taxes				24	
Property Insurance				17	
Investment Repairs				<u>9</u>	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>				<u>57</u>	
<b>TOTAL CASH COSTS/ACRE</b>				<u>226</u>	
<b>NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):</b>					
Land				149	
Fuel Tanks & Pumps				1	
Shop Building				6	
Shop Tools				2	
Wheel Line Sprinkler System				11	
Hay Barn				15	
Equipment				<u>21</u>	
<b>TOTAL NON-CASH OVERHEAD COSTS/ACRE</b>				<u>205</u>	
<b>TOTAL COSTS/ACRE</b>				<u>431</u>	
<b>NET RETURNS ABOVE TOTAL COSTS</b>				<u>-26</u>	

Table 3.

U.C. COOPERATIVE EXTENSION  
MONTHLY CAST COSTS PER ACRE TO PRODUCE GRAIN HAY  
INTERMOUNTAIN REGION  
SISKIYOU COUNTY - 2007

Beginning OCT 06 Ending SEP 07	OCT 06	NOV 06	DEC 06	JAN 07	FEB 07	MAR 07	APR 07	MAY 07	JUN 07	JUL 07	AUG 07	SEP 07	TOTAL
Cultural:													
Plow Alfalfa Stand	15												15
Fertilize: Ammonium Sulfate					49								49
Finish Disc 2X							9						9
Plant Grain @ 100 Lbs/Acre						20							20
Irrigate 3X							5	8	9				22
Weed Control - Broadleaf Weeds								9					9
Pickup Truck Use	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>13</u>
<b>TOTAL CULTURAL COSTS</b>	<b>16</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>50</b>	<b>30</b>	<b>7</b>	<b>19</b>	<b>10</b>	<b>1</b>			<b>137</b>
Harvest:													
Swath Hay										3			3
Rake Hay										3			3
Bale Hay										8			8
Roadside Hay										7			7
Load Hay										<u>3</u>			<u>3</u>
<b>TOTAL HARVEST COSTS</b>										<b>25</b>			<b>25</b>
Interest on Operating Capital @ 10.00%													
	0	0	0	0	1	1	1	1	1	1			6
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>17</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>51</b>	<b>31</b>	<b>8</b>	<b>20</b>	<b>11</b>	<b>28</b>			<b>168</b>
OVERHEAD:													
Office Expense	1	1	1	1	1	1	1	1	1	1			6
Liability Insurance						2							2
Property Taxes				12						12			24
Property Insurance				8						8			17
Investment Repairs	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>9</u>
<b>TOTAL CASH OVERHEAD COSTS</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>22</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>22</b>	<b>1</b>	<b>1</b>	<b>57</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>18</b>	<b>3</b>	<b>3</b>	<b>23</b>	<b>54</b>	<b>33</b>	<b>9</b>	<b>21</b>	<b>12</b>	<b>49</b>	<b>1</b>	<b>1</b>	<b>226</b>

Table 4.

U.C. COOPERATIVE EXTENSION  
WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS  
INTERMOUNTAIN REGION  
SISKIYOU COUNTY - 2007

ANNUAL EQUIPMENT COSTS								
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead -		Total
						Insur- ance	Taxes	
06	130 HP 2WD Tractor	92,591	12	23,149	10,538	413	579	11,530
06	62 HP 2WD Tractor	36,228	12	9,057	4,123	162	226	4,511
06	Baler - Pull-Type w/Engine	60,000	10	9,903	7,933	250	350	8,532
06	Balewagon	23,318	10	4,124	3,063	98	137	3,299
06	Disc - Finish 21"	22,350	10	3,952	2,936	94	132	3,162
06	Grain Drill - 20'	125,000	10	20,631	16,528	520	728	17,776
06	Hay Squeeze	40,000	10	6,602	5,289	166	233	5,688
06	Pickup 4WD - 3/4 Ton	36,000	7	13,656	5,172	177	248	5,598
06	Plow 4 Bottom Rollover	16,500	20	860	1,567	62	87	1,716
06	Rake - 20' Center Delivery	21,919	10	3,876	2,880	92	129	3,101
06	Swather - SP 14'	75,000	15	7,200	8,084	293	411	8,788
TOTAL		548,906		103,010	68,114	2,327	3,260	73,701
40% of New Cost *		219,562		41,204	27,246	931	1,304	29,481

\*Used to reflect a mix of new and used equipment.

ANNUAL INVESTMENT COSTS								
Description	Price	Yrs Life	Salvage Value	Capital Recovery	----- Cash Overhead -----			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT								
Wheel Line Irrigation System	74,750	20	7,475	7,016	294	411	2,056	9,777
Fuel Tanks & Pumps	9,315	20	932	874	37	51	256	1,218
Hay Barn	100,000	20	10,000	9,386	393	550	2,750	13,079
Land	1,311,750	40	1,311,750	95,102	9,366	13,118	0	117,585
Shop Building	46,332	30	4,633	3,781	182	255	450	4,668
Shop Tools	11,583	10	1,158	1,585	45	64	318	2,013
TOTAL INVESTMENT	1,553,730		1,335,948	117,745	10,316	14,448	5,830	148,339

ANNUAL BUSINESS OVERHEAD COSTS				
Description	Units/		Price/ Unit	Total Cost
	Farm	Unit		
Liability Insurance	645	Acre	1.57	1,013
Office Expense	645	Acre	6.20	3,998

Table 5.

U.C. COOPERATIVE EXTENSION  
HOURLY EQUIPMENT COSTS  
INTERMOUNTAIN REGION  
SISKIYOU COUNTY - 2007

		----- COSTS PER HOUR -----							
		Actual	- Cash Overhead -			----- Operating -----			
Yr	Description	Hours Used	Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
06	130 HP 2WD Tractor	999.6	4.22	0.17	0.23	2.68	19.96	22.64	27.26
06	62 HP 2WD Tractor	999.1	1.65	0.06	0.09	1.05	8.05	9.10	10.91
06	Baler - Pull-Type w/Engine	249.8	12.71	0.40	0.56	5.74	0.00	5.74	19.41
06	Disc - Finish 21"	199.5	6.14	0.20	0.28	2.48	0.00	2.48	9.10
06	Grain Drill - 20'	149.1	7.88	0.25	0.35	3.92	0.00	3.92	12.41
06	Balewagon	197.5	33.47	1.05	1.47	18.05	18.42	36.47	72.46
06	Hay Squeeze	199.3	10.62	0.33	0.47	5.78	12.99	18.77	30.18
06	Pickup 4WD - 3/4 Ton	284.5	7.27	0.25	0.35	1.75	9.66	11.41	19.28
06	Plow 4 Bottom Rollover	99.5	6.30	0.25	0.35	2.68	0.00	2.68	9.58
06	Rake - 20' Center Delivery	249.9	4.61	0.15	0.21	2.02	0.00	2.02	6.99
06	Swather - SP 14'	199.3	16.22	0.59	0.82	4.48	0.00	4.48	22.11

Table 6.

U.C. COOPERATIVE EXTENSION  
RANGING ANALYSIS  
INTERMOUNTAIN REGION  
SISKIYOU COUNTY - 2007

	YIELD (TON/ACRE)						
	3.0	3.5	4.0	4.5	5.0	5.5	6.0
COSTS PER ACRE AT VARYING YIELDS FOR GRAIN HAY							
<b>OPERATING COSTS/ACRE:</b>							
Cultural Cost	137	137	137	137	137	137	137
Harvest Cost	17	20	22	25	28	31	33
Interest on Operating Capital	6	6	6	6	6	6	7
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>160</b>	<b>163</b>	<b>166</b>	<b>168</b>	<b>171</b>	<b>174</b>	<b>177</b>
<b>TOTAL OPERATING COSTS/TON</b>	<b>53</b>	<b>47</b>	<b>41</b>	<b>37</b>	<b>34</b>	<b>32</b>	<b>29</b>
CASH OVERHEAD COSTS/ACRE	57	57	57	57	58	58	58
<b>TOTAL CASH COSTS/ACRE</b>	<b>217</b>	<b>220</b>	<b>223</b>	<b>226</b>	<b>229</b>	<b>232</b>	<b>235</b>
<b>TOTAL CASH COSTS/TON</b>	<b>72</b>	<b>63</b>	<b>56</b>	<b>50</b>	<b>46</b>	<b>42</b>	<b>39</b>
NON-CASH OVERHEAD COSTS/ACRE	202	203	204	205	206	208	209
<b>TOTAL COSTS/ACRE</b>	<b>419</b>	<b>423</b>	<b>427</b>	<b>431</b>	<b>435</b>	<b>439</b>	<b>443</b>
<b>TOTAL COSTS/TON</b>	<b>140</b>	<b>121</b>	<b>107</b>	<b>96</b>	<b>87</b>	<b>80</b>	<b>74</b>

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR GRAIN HAY							
PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Grain Hay	3.0	3.5	4.0	4.5	5.0	5.5	6.0
75	20	47	74	102	129	156	183
80	50	82	114	147	179	211	243
85	80	117	154	192	229	266	303
90	110	152	194	237	279	321	363
95	140	187	234	282	329	376	423
100	170	222	274	327	379	431	483
105	200	257	314	372	429	486	543

NET RETURNS PER ACRE ABOVE CASH COSTS FOR GRAIN HAY							
PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Grain Hay	3.0	3.5	4.0	4.5	5.0	5.5	6.0
75	-37	-10	17	44	71	98	125
80	-7	25	57	89	121	153	185
85	23	60	97	134	171	208	245
90	53	95	137	179	221	263	305
95	83	130	177	224	271	318	365
100	113	165	217	269	321	373	425
105	143	200	257	314	371	428	485

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR GRAIN HAY							
PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Grain Hay	3.0	3.5	4.0	4.5	5.0	5.5	6.0
75	-239	-213	-187	-161	-135	-109	-83
80	-209	-178	-147	-116	-85	-54	-23
85	-179	-143	-107	-71	-35	1	37
90	-149	-108	-67	-26	15	56	97
95	-119	-73	-27	19	65	111	157
100	-89	-38	13	64	115	166	217
105	-59	-3	53	109	165	221	277

Table 7.

U.C. COOPERATIVE EXTENSION  
 COSTS AND RETURNS/ BREAKEVEN ANALYSIS  
 INTERMOUNTAIN REGION  
 SISKIYOU COUNTY - 2007

COSTS AND RETURNS - PER ACRE BASIS							
Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Grain Hay	405	168	237	226	179	431	-26

COSTS AND RETURNS - TOTAL ACREAGE							
Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Grain Hay	25,110	10,441	14,669	14,001	11,109	26,735	-1,625

BREAKEVEN PRICES PER YIELD UNIT						
CROP	Base Yield (Units/Acre)	Yield Units	Operating Costs	Cash Costs	Total Costs	Breakeven Price To Cover \$ per Yield Unit
Grain Hay	4.5	Ton	37.42	50.18	95.82	

BREAKEVEN YIELDS PER ACRE						
CROP	Yield Units	Base Price (\$/Unit)	Operating Costs	Cash Costs	Total Costs	Breakeven Yield To Cover Yield Units / Acre
Grain Hay	Ton	90.00	1.9	2.5	4.8	

Table 8.

U.C. COOPERATIVE EXTENSION  
 DETAIL BY OPERATIONS  
 INTERMOUNTAIN REGION  
 SISKIYOU COUNTY - 2007

Operation	Operation Month	Tractor/ Power Unit	Implement	Material	Broadcast Rate/acre	Material Unit
Cultural:						
Plow Alfalfa Stand	October	130 HP 2WD Tractor	Plow 4 Bottom Rollover			
Fertilize: Ammonium Sulfate	March	Custom	Ground Application	21-0-0-24	80.00	Lb
Finish Disc 2X	March	130 HP 2WD Tractor	Disc - Finish 21"			
Plant Grain	March	130 HP 2WD Tractor	Grain Drill - 20'	Grain Seed	100.00	Lb
Weed Control - Broadleaf Weeds	May	Custom	Ground Application	2,4-D	1.50	Pint
Irrigate 3X	April	Labor		Water	1.50	AcIn
	May	Labor		Water	3.00	AcIn
	June	Labor		Water	3.00	AcIn
Swath Hay	July	Swather - SP 14'				
Rake Hay	July	62 HP 2WD Tractor	Rake - 20' Center Delivery			
Bale Hay	July	62 HP 2WD Tractor	Baler - Pull-Type w/Engine	Hay Bale Twine		
Roadside Hay	July	Balewagon				
Load Hay	July	Hay Squeeze				
Pickup Truck Use	All Months					