

**U.C. COOPERATIVE EXTENSION**  
**SAMPLE COSTS TO ESTABLISH AND PRODUCE**  
***ALFALFA HAY***  
**IN MONO AND INYO COUNTIES - 1993**

by

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The detailed costs for alfalfa hay establishment and production in the Mono and Inyo Counties are presented in this study. The hypothetical farm used in this report consists of 500 acres of alfalfa hay production.

Practices described are based on those production procedures considered typical for this crop and area. Sample costs given for labor, materials, equipment and contract services are based on current figures. Some costs and practices detailed in this study may not be applicable to your situation. This study is only intended as a guide and can be used in making production decisions, determining potential returns, preparing budgets and evaluating production loans. A blank **Your Costs** column is provided to enter your actual costs on **Tables 1 and 6, Costs Per Acre To Establish Alfalfa Hay and Costs Per Acre To Produce Alfalfa Hay.**

This study consists of **General Assumptions for Establishing and Producing Alfalfa Hay** and ten tables.

Table 1.	<b>Costs Per Acre To Establish Alfalfa</b>
Table 2.	<b>Detail Of Costs Per Acre To Establish Alfalfa</b>
Table 3.	<b>Monthly Cash Costs Per Acre To Establish Alfalfa</b>
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Table 6.	<b>Monthly Cash Costs Per Acre To Produce Alfalfa Hay</b>
Table 7.	<b>Whole Farm Annual Equipment, Investment And Business Overhead Costs For Alfalfa Hay Establishment And Production</b>
Table 8.	<b>Hourly Equipment Costs For Alfalfa Hay Production</b>
Table 9.	<b>Ranging Analysis</b>
Table 10.	<b>Costs And Returns / Breakeven Analysis</b>

For an explanation of calculations used for the study refer to the attached General Assumptions, call the Department of Agricultural Economics, Cooperative Extension, University of California, Davis, California, (916) 752-3589 or call the Farm Advisor in the county of interest.

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# GENERAL ASSUMPTIONS FOR ESTABLISHING AND PRODUCING ALFALFA HAY

*Mono and Inyo Counties - 1993*  
U.C. Cooperative Extension

The following is a description of some general assumptions pertaining to sample costs of alfalfa hay establishment and production in Mono and Inyo Counties. The costs are based on all of the cultural practices used by growers in this region, some of which may not be used during every production year. 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.*

## 1. LAND:

This cost of production study is based on a 500 acre field crop farm of which 400 acres are producing alfalfa and 100 acres have a stand being established in any given year. The land in this study is rented by the grower and is charged \$100 per acre annually. Oats are grown in rotation, before the alfalfa stand is planted.

## 2. STAND ESTABLISHMENT:

**Costs Per Acre To Establish Alfalfa Hay, Table 1,** shows the cost associated with ground preparation, planting and growing an alfalfa stand until the first production year. The alfalfa stand is planted in late summer and the first cutting of hay occurs in May of the production year.

Primary tillage operations such as subsoiling, plowing, discing and land planing are accomplished with a 130 HP (horsepower) wheel tractor. Subsequent operations including spreading fertilizer and planting are performed with the 50 HP wheel tractor. Applying and incorporating a pre-emergent herbicide are performed by a custom operator. After the pre-emergent herbicide is applied, most all of the successive operations are performed with the 70 HP wheel tractor.

Several different soil amendments are spread before the alfalfa is planted in order to adjust for deficiencies in the soil. Mined sulfur is applied at a rate of 400 pounds per acre by the supplier and  $P_2O_5$  at 400 pounds per acre is spread using a tractor and spreader owned by the grower.

Six acre inches of water is applied after the fertilizers are applied and just prior to planting. The remainder of the 1.5 acre-feet of water used by the crop in the establishment year is applied using a wheel line sprinkler system during the months of August, September and October. Irrigation water is assumed to be supplied from wells on the property and applied with a wheel line sprinkler irrigation system. The wells are owned by the land owner and the wheel line systems are owned by the grower. Pumping costs are calculated at \$30 per acre-foot.

No herbicides or pesticides are used in the establishment year.

The annual production cost in the study represents an average year's production cost from the second through life of the stand. The life of the stand is assumed to be 7 years. The

cost per acre to establish an alfalfa stand is represented in **Table 1** as the Total Cash Cost/Acre. To obtain stand establishment cost for an average production year, the Total Cash Cost/Acre for the establishment year in **Table 1** is multiplied by the total acreage (500) and divided by the number of years (7). This becomes an investment cost in **Table 7**.

### **3. CULTURAL PRACTICES AND INPUTS:**

Cultural, pesticide and fertilizer inputs for the production of alfalfa hay vary considerably from grower to grower and field to field. While a field can produce alfalfa hay for 6 to 8 years, disease and weed infestations may reduce this period by one or more years. A 7 year stand life is assumed in this study.

Weed control begins in February with an application of Velpar to kill pre-emergent weeds; Treflan TR-10 will sometimes be used in March instead of the February Velpar Treatment. Later in March 2, 4D-B is sprayed to control post emergent weeds in the stand. Both of these herbicides are applied using a tractor and sprayer.

Each of the sixteen irrigations applies 3.75 acre-inches of water during the growing season, April through October. A total of 5.0 acre-feet of water is applied during the season. Growers have noticed that applying additional water under good management practices can lead to greater yields. As a rule of thumb for the area; 1.0 acre-foot of water will yield 1.0 ton of hay.

Phosphorous and sulfur fertilizers are spread on the stand once every three years. In the year that the fertilizers are applied, they are spread at a rate of 400 pounds per acre of both phosphorus and sulfur. The amount and cost shown in **Table 5** represents one third of the total quantity and expense of the fertilizers. Phosphorus is applied by a tractor and spreader owned by the grower and the sulfur is custom spread. Both are applied in March.

The pesticides and rates mentioned in this cost study are a few of those that are listed in the [UC IPM Alfalfa Pest Management Guidelines](#) and the [IPM For Alfalfa](#) manual. The practices and inputs used in this cost study serve only as a typical guide. Variations in cultural inputs can vary due to seasonal pest pressures, water availability and government regulations. Written recommendations are required for most pesticides and are written by licensed pest control advisors. For information and pesticide use permits contact the Mono/Inyo County Agricultural Commissioners Office. Contact the Mono/Inyo County farm advisor for additional information.

### **4. HARVEST:**

In this cost study the ranch owns its harvesting equipment and performs all of its harvest operations. This study assumes a three twine baler. Four cuttings of hay is normal for the area, though some fields are harvested six times. The equipment for harvest operations are inventoried, and labor, fuel, repairs, depreciation, and interest on investment, are calculated as a cost of production. If a grower contracts his harvest operation, all harvest equipment and its appropriate cost should be subtracted from harvest and investment costs in **Table 5** and a custom charge would then be added to harvest costs in **Table 5**.

The fields are also grazed with sheep during the winter for a fee. Returns from winter grazing for this area range from \$20 to \$30 per acre. It is assumed in this study that 8 ewes per acre are grazed for 30 days at a daily rate of \$0.10/ewe. A total of \$24 per acre is collected as additional income from the alfalfa stand for winter grazing.

#### 5. YIELDS & RETURNS:

The crop yield used in this study is 5.5 tons of hay per acre from a total of 4 cuttings per year once the stand is established. However, this region has the potential to raise 7 tons per acre of alfalfa hay under superior management and additional water.

An estimated price of a \$90 per ton of hay is used in this study. Returns will vary and the \$90 per ton used in the cost study is an estimate taking into consideration current situations. **Table 9** indicates the effects on grower returns based on varying yields and returns.

#### 6. RISK:

The risks associated with alfalfa production 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 alfalfa production.

Because of the risk involved, access to a market is crucial. A grower should identify potential markets and where possible, have a contract for their hay before any alfalfa production begins.

#### 7. LABOR:

Basic hourly wages for workers are \$5.93 and \$4.63 per hour for machine operators and field workers (irrigator), respectively. Adding 34% for SDI, FICA, insurance and other benefits increases the labor rates shown to \$7.95 per hour for machine labor and \$6.25 per hour for non-machine labor. The labor hours for operations involving machinery are 20% higher than the operation time to account for extra labor involved in equipment set-up, moving, maintenance and repair. Wages for managers are not included as a cash cost. Any returns above total costs are considered returns to management.

#### 8. INVESTMENT:

The investments shown in **Table 7** are those that are partially or completely allocated to the alfalfa hay operation. Costs of investments such as stand establishment and hay barn are attributed only to alfalfa hay and cannot be spread over the rest of the farm's operations. Other investments including land, shop buildings and irrigation systems can be used by the whole farm so only a portion of the costs can be assigned to the alfalfa hay operation and the rest of the costs are distributed to the other farm enterprises. Annual investments shown in **Tables 1** and **4** represent depreciation and opportunity cost for each investment on an annual per acre basis.

#### 9. OVERHEAD:

County taxes are calculated as 1% of the average value of equipment, buildings and improvements. Insurance for equipment and improvements to the farm is charged at

0.5% of the average value over the assets useful life. Liability insurance covers accidents on the farm and costs \$550 for the entire farm or \$1.10 per acre. Office and business costs are estimated at \$20 per acre for the ranch. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc.

#### **10. INTEREST:**

Interest on operating capital is based on cash costs and is calculated monthly until harvest at a rate of 9.00% per year. Real interest rates are used in this study, so no adjustments for inflation are included. Nominal interest rates would contain a factor for inflation which might run 3% to 4% higher than the real interest rate. Interest is also charged on investment at 4.00% per year to account for income foregone that could be received from an alternative investment (opportunity cost) and is based on the average value of the buildings and equipment.

#### **11. EQUIPMENT COSTS:**

Most of the equipment inventory on typical alfalfa farms in Mono and Inyo Counties are purchased used and has a reduced value. This study shows current purchase price for new equipment with an adjustment to 50% of new value to indicate a mix of new and used equipment.

In allocating the equipment costs per acre, the following calculations were made and shown in **Table 7**: (a) **Original Cost** of equipment is the cost of the new equipment plus sales tax. (b) **Depreciation** is straight line with a 10% salvage value. (c) **Interest** on investment is calculated as the average value per acre of the equipment during its useful life, multiplied by an interest rate of 4.00%. Average value equals new cost plus salvage value divided by 2 on a per acre basis. (d) The total investment costs of the depreciation and the interest reflect a mix of new and used equipment. These values are also used in **Tables 1** and **4**. Hourly equipment costs are shown in **Table 8**. The equipment listed in **Tables 7** and **8** indicate only that equipment which is used in the alfalfa enterprise and does not necessarily include all of the equipment that would be found on a typical farm growing alfalfa. All of this equipment is used on the entire 500 acre ranch.

#### **12. FUEL & REPAIR:**

The fuel and repair cost per acre for each operation in **Tables 1** and **4**, is determined by multiplying the total hourly operating cost for each piece of equipment in **Table 8**, by the number of hours per acre for that operation. Prices for on-farm delivery of diesel and gasoline are \$1.00 and \$1.30 per gallon respectively.

Table 1.

U.C. COOPERATIVE EXTENSION  
 COSTS PER ACRE TO ESTABLISH ALFALFA  
 MONO AND INYO COUNTIES - 1993

Labor Rate: \$7.95/hr. machine labor  
 \$6.25/hr. non-machine labor

Interest Rate: 9.00%

Operation	Operation Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Cash and Labor Material Cost	Costs per Acre Custom/Rent	Total Cost	Your Cost
<b>Cultural:</b>							
Subsoil	0.33	3.15	5.44	0.00	0.00	8.59	
Plow	0.40	3.82	7.20	0.00	0.00	11.02	
Disc	0.30	2.86	6.50	0.00	0.00	9.36	
Land Plane Field - 3X	0.41	3.95	7.58	0.00	0.00	11.53	
Irrigate - (1.5 AcFt)	1.08	6.75	0.00	45.00	0.00	51.75	
Fertilize - Sulfur 400 Lbs/Acre	0.00	0.00	0.00	12.00	7.50	19.50	
Fertilize - P <sub>2</sub> O <sub>5</sub> 400 Lbs/Acre	0.20	1.96	1.48	44.00	0.00	47.44	
Plant @ 20 Lbs/Acre	0.13	1.24	1.17	50.00	0.00	52.41	
Pickup Truck Use	0.11	1.02	0.59	0.00	0.00	1.61	
<b>TOTAL CULTURAL COSTS</b>	<b>2.97</b>	<b>24.74</b>	<b>29.97</b>	<b>151.00</b>	<b>7.50</b>	<b>213.21</b>	
Interest on operating capital @ 9.00%							7.89
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>24.74</b>	<b>29.97</b>	<b>151.00</b>	<b>7.50</b>	<b>221.10</b>	
<b>TOTAL OPERATING COSTS/TON</b>							<b>0.00</b>
<b>CASH OVERHEAD:</b>							
Land Rent							100.00
Office Expense							20.00
Liability Insurance							1.10
Property Taxes							6.03
Property Insurance							3.01
Investment Repairs							2.25
<b>TOTAL CASH OVERHEAD COSTS</b>							<b>132.39</b>
<b>TOTAL CASH COSTS/ACRE</b>							<b>353.49</b>
<b>TOTAL CASH COSTS/TON</b>							<b>0.00</b>
<b>NON-CASH OVERHEAD:</b>							
Investment	Per producing Acre	Depreciation	Annual Cost	Interest @ 4.00%			
Buildings	70.00	2.80		1.40			4.20
Fuel Wagon	3.00	0.27		0.07			0.34
Shop Tools	20.00	1.20		0.44			1.64
Hay Barns - 2 @ 1000	80.00	4.00		1.60			5.60
Fuel Tanks & Pumps	16.10	0.81		0.32			1.13
Wheel Line Sprinkler System	747.43	22.42		16.44			38.87
Motorcycle	2.00	0.18		0.04			0.22
Equipment	171.86	14.85		3.80			18.64
<b>TOTAL NON-CASH OVERHEAD COSTS</b>	<b>1110.39</b>	<b>46.52</b>		<b>24.11</b>			<b>70.64</b>
<b>TOTAL COSTS/ACRE</b>							<b>424.13</b>
<b>TOTAL COSTS/TON</b>							<b>0.00</b>

Table 2.

U.C. COOPERATIVE EXTENSION  
 DETAILS OF COSTS PER ACRE TO ESTABLISH ALFALFA  
 MONO AND INYO COUNTIES - 1993

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 of other similar products.*

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
=====					
Labor Rate: \$7.95/hr. machine labor					Interest Rate: 9.00%
\$6.25/hr. non-machine labor					
-----					
OPERATING COSTS					
Water:					
Water - Pumped	18.00	acin	2.50	45.00	
Fertilizer:					
Sulfur	400.00	lb	0.03	12.00	
P <sub>2</sub> O <sub>5</sub>	400.00	lb	0.11	44.00	
Custom:					
Spread	1.00	acre	7.50	7.50	
Seed:					
Seed	20.00	lb	2.50	50.00	
Labor (machine)	2.13	hrs	7.95	17.99	
Labor (non-machine)	1.08	hrs	6.25	6.75	
Fuel - Gas	0.21	gal	1.30	0.28	
Fuel - Diesel	16.30	gal	1.00	16.30	
Lube				2.49	
Machinery repair				10.91	
Interest on operating capital @ 9.00%				7.89	
				-----	
TOTAL OPERATING COSTS/ACRE				221.10	
TOTAL OPERATING COSTS/TON				0.00	
-----					
CASH OVERHEAD COSTS:					
Land Rent				100.00	
Office Expense				20.00	
Liability Insurance				1.10	
Property Taxes				6.03	
Property Insurance				3.01	
Investment Repairs				2.25	
				-----	
TOTAL CASH OVERHEAD COSTS/ACRE				132.39	
TOTAL CASH COSTS/ACRE				353.49	
TOTAL CASH COSTS/TON				0.00	
-----					
NON-CASH OVERHEAD COSTS (DEPRECIATION & INTEREST):					
Buildings				4.20	
Fuel Wagon				0.34	
Shop Tools				1.64	
Hay Barns - 2 @ 1000				5.60	
Fuel Tanks & Pumps				1.13	
Wheel Line Sprinkler System				38.87	
Motorcycle				0.22	
Equipment				18.64	
				-----	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				70.64	
TOTAL COSTS/ACRE				424.13	
TOTAL COSTS/TON				0.00	
=====					

Table 3.

U.C. COOPERATIVE EXTENSION  
MONTHLY CASH COSTS PER ACRE TO ESTABLISH ALFALFA  
MONO AND INYO COUNTIES - 1993

Beginning	JUL 93	JUN 93	JUL 93	AUG 93	SEP 93	OCT 93	NOV 93	DEC 93	JAN 94	FEB 94	MAR 94	APR 94	MAY 94	TOTAL
Ending	MAY 94													
Cultural:														
Subsoil			8.59											8.59
Plow			11.02											11.02
Disc			9.36											9.36
Land Plane Field - 3X			11.53											11.53
Irrigate - (1.5 AcFt)				17.25	17.25	17.25								51.75
Fertilize - Sulfur				19.50										19.50
Fertilize - P <sub>2</sub> O <sub>5</sub>				47.44										47.44
Plant @ 20 Lbs/Acre				52.41										52.41
Pickup Truck Use			0.27	0.27	0.27	0.27	0.27	0.27						1.61
TOTAL CULTURAL COSTS			40.77	136.86	17.52	17.52	0.27	0.27						213.21
Interest on oper. capital			0.31	1.33	1.46	1.60	1.60	1.60						7.89
TOTAL OPERATING COSTS/ACRE			41.08	138.20	18.98	19.11	1.87	1.87						221.10
TOTAL OPERATING COSTS/TON			0.00	0.00	0.00	0.00	0.00	0.00						0.00
OVERHEAD:														
Land Rent		100.00												100.00
Office Expense			3.33	3.33	3.33	3.33	3.33	3.33						20.00
Liability Insurance			0.18	0.18	0.18	0.18	0.18	0.18						1.10
Property Taxes			3.01						3.01					6.03
Property Insurance			1.51						1.51					3.01
Investment Repairs			0.38	0.38	0.38	0.38	0.38	0.38						2.25
TOTAL CASH OVERHEAD COSTS		100.00	8.41	3.89	3.89	3.89	3.89	3.89	4.52					132.39
TOTAL CASH COSTS/ACRE		100.00	49.49	142.09	22.87	23.00	5.76	5.76	4.52					353.49
TOTAL CASH COSTS/TON		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					0.00



Table 4.

U.C. COOPERATIVE EXTENSION  
 COSTS PER ACRE TO PRODUCE ALFALFA HAY  
 INYO & MONO COUNTIES - 1993

Labor Rate: \$7.95/hr. machine labor  
 \$6.25/hr. non-machine labor

Interest Rate: 9.00%  
 Yield per Acre: 5.50 ton

Operation	Operation Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Cash and Labor Material Cost	Costs per Acre Custom/Rent	Total Cost	Your Cost
<b>Cultural:</b>							
Weed Control - Pre-Emergent	0.12	1.14	0.88	8.94	0.00	10.96	
Weed Control - Post Emergent	0.12	1.14	0.88	3.96	0.00	5.98	
Fertilize - Sulfur 1 of 3 Year	0.00	0.00	0.00	3.99	2.47	6.47	
Fertilize - P <sub>2</sub> O <sub>5</sub> 1 of 3 Years	0.10	0.95	0.72	14.63	0.00	16.31	
Insect Control - Aphids	0.00	0.00	0.00	3.56	6.00	9.56	
Irrigate - (5 AcFt)	2.88	18.00	0.00	150.00	0.00	168.00	
Insect Control - Worms	0.00	0.00	0.00	19.80	6.00	25.80	
Insect Control - Weevils	0.00	0.00	0.00	14.84	6.00	20.84	
Pickup Truck Use	0.11	1.02	0.59	0.00	0.00	1.61	
<b>TOTAL CULTURAL COSTS</b>	<b>3.33</b>	<b>22.26</b>	<b>3.07</b>	<b>219.72</b>	<b>20.48</b>	<b>265.53</b>	
<b>Harvest:</b>							
Swath Hay - 4X	0.80	7.63	14.54	0.00	0.00	22.17	
Rake Hay - 4X	0.27	2.59	2.40	0.00	0.00	4.99	
Bale Hay - 4X	1.12	21.37	16.10	18.05	0.00	55.52	
Roadside Hay - 4X	0.50	4.77	13.26	0.00	0.00	18.03	
<b>TOTAL HARVEST COSTS</b>	<b>2.69</b>	<b>36.37</b>	<b>46.30</b>	<b>18.05</b>	<b>0.00</b>	<b>100.72</b>	
Interest on operating capital @ 9.00%							10.23
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>58.63</b>	<b>49.37</b>	<b>237.77</b>	<b>20.48</b>	<b>376.47</b>	
<b>TOTAL OPERATING COSTS/TON</b>							<b>68.45</b>
<b>CASH OVERHEAD:</b>							
Land Rent							100.00
Office Expense							20.00
Liability Insurance							1.10
Property Taxes							8.95
Property Insurance							4.48
Investment Repairs							2.25
<b>TOTAL CASH OVERHEAD COSTS</b>							<b>136.78</b>
<b>TOTAL CASH COSTS/ACRE</b>							<b>513.25</b>
<b>TOTAL CASH COSTS/TON</b>							<b>93.32</b>
<b>NON-CASH OVERHEAD:</b>							
Investment	Per producing Acre	Depreciation	Annual Cost	Interest @ 4.00%			
Buildings	135.20	5.41		2.70			8.11
Fuel Tanks & Pumps	16.10	0.81		0.32			1.13
Fuel Wagon	3.12	0.28		0.07			0.35
Hay Barns - 2 @ 1000	80.00	4.00		1.60			5.60
Motorcycle	2.08	0.19		0.05			0.23
Shop Tools	20.80	1.25		0.46			1.71
Wheel Line Sprinkler System	747.43	22.42		16.44			38.87
Establishment Cost	353.49	50.50		7.07			57.57
Equipment	323.00	31.74		7.11			38.85
<b>TOTAL NON-CASH OVERHEAD COSTS</b>	<b>1681.22</b>	<b>116.59</b>		<b>35.82</b>			<b>152.41</b>
<b>TOTAL COSTS/ACRE</b>							<b>665.66</b>
<b>TOTAL COSTS/TON</b>							<b>121.03</b>

Table 5.

U.C. COOPERATIVE EXTENSION  
 COSTS AND RETURNS PER ACRE TO PRODUCE ALFALFA HAY  
 INYO & MONO COUNTIES - 1993

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 of other similar products.*

Labor Rate: \$7.95/hr. machine labor                      Interest Rate: 9.00%  
                   \$6.25/hr. non-machine labor

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
=====					
GROSS RETURNS					
Hay	5.50	ton	90.00	495.00	
Grazing	1.00	acre	24.00	24.00	
-----					
TOTAL GROSS RETURNS FOR ALFALFA HAY				519.00	
-----					
OPERATING COSTS					
Herbicide:					
Velpar	1.00	pint	8.94	8.94	
2,4-DB	4.00	pint	0.99	3.96	
Lorsban 4 E	0.50	pint	7.12	3.56	
Fertilizer:					
Sulfur	133.00	lb	0.03	3.99	
P <sub>2</sub> O <sub>5</sub>	133.00	lb	0.11	14.63	
Custom:					
Spread	0.33	acre	7.50	2.47	
Air Application	3.00	appl	6.00	18.00	
Water:					
Water - Pumped	60.00	acin	2.50	150.00	
Baling Twine:					
Baling twine	5.52	ton	3.27	18.05	
Insecticide:					
Sevin 5 Bait	30.00	lb	0.66	19.80	
Cygon 400	1.00	pint	4.73	4.73	
Furadan 4F	1.00	pint	10.11	10.11	
Labor (machine)	4.98	hrs	7.95	40.63	
Labor (non-machine)	2.88	hrs	6.25	18.00	
Fuel - Gas	2.68	gal	1.30	3.48	
Fuel - Diesel	12.99	gal	1.00	12.99	
Lube				2.47	
Machinery repair				30.43	
Interest on operating capital @ 9.00%				10.23	
-----					
TOTAL OPERATING COSTS/ACRE				376.47	
TOTAL OPERATING COSTS/TON				68.45	
-----					
NET RETURNS ABOVE OPERATING COSTS				142.53	
-----					
CASH OVERHEAD COSTS:					
Land Rent				100.00	
Office Expense				20.00	
Liability Insurance				1.10	
Property Taxes				8.95	
Property Insurance				4.48	
Investment Repairs				2.25	
-----					
TOTAL CASH OVERHEAD COSTS/ACRE				136.78	
-----					
TOTAL CASH COSTS/ACRE				513.25	
TOTAL CASH COSTS/TON				93.32	
-----					
NON-CASH OVERHEAD COSTS (DEPRECIATION & INTEREST):					
Buildings				8.11	
Fuel Tanks & Pumps				1.13	
Fuel Wagon				0.35	
Hay Barns - 2 @ 1000				5.60	
Motorcycle				0.23	
Shop Tools				1.71	
Wheel Line Sprinkler System				38.87	
Establishment Cost				57.57	
Equipment				38.85	
-----					
TOTAL NON-CASH OVERHEAD COSTS/ACRE				152.41	
-----					
TOTAL COSTS/ACRE				665.66	
TOTAL COSTS/TON				121.03	
-----					
NET RETURNS ABOVE TOTAL COSTS				-146.66	
=====					

Table 6.

U.C. COOPERATIVE EXTENSION  
MONTHLY CASH COSTS PER ACRE TO PRODUCE ALFALFA HAY  
INYO & MONO COUNTIES - 1993

Beginning	MAR 93	JAN 93	FEB 93	MAR 93	APR 93	MAY 93	JUN 93	JUL 93	AUG 93	SEP 93	OCT 93	NOV 93	DEC 93	TOTAL
Ending	DEC 93													
Cultural:														
Weed Control - Pre-Emergent				10.96										10.96
Weed Control - Post Emergent				5.98										5.98
Fertilize - Sulfur				6.47										6.47
Fertilize - P <sub>2</sub> O <sub>5</sub>				16.31										16.31
Insect Control - Aphids					9.56									9.56
Irrigate - (5 AcFt)					21.00	31.50	21.00	31.50	21.00	31.50	10.50			168.00
Insect Control - Worms						12.90	12.90							25.80
Insect Control - Weevils						10.42	10.42							20.84
Pickup Truck Use				0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20			1.61
TOTAL CULTURAL COSTS				39.92	30.76	55.02	44.52	31.70	21.20	31.70	10.70			265.53
Harvest:														
Swath Hay - 4X						5.54		5.54	5.54	5.54				22.17
Rake Hay - 4X						1.25		1.25	1.25	1.25				4.99
Bale Hay - 4X						13.88		13.88	13.88	13.88				55.52
Roadside Hay - 4X						4.51		4.51	4.51	4.51				18.03
TOTAL HARVEST COSTS						25.18		25.18	25.18	25.18				100.72
Interest on oper. capital				0.30	0.53	1.13	1.47	1.89	2.24	2.67				10.23
TOTAL OPERATING COSTS/ACRE				40.22	31.29	81.33	45.99	58.77	48.62	59.55	10.70			376.47
TOTAL OPERATING COSTS/TON				7.31	5.69	14.79	8.36	10.69	8.84	10.83	1.95			68.45
OVERHEAD:														
Land Rent	100.00													100.00
Office Expense				2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50			20.00
Liability Insurance				0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14			1.10
Property Taxes								4.48						8.95
Property Insurance								2.24						4.48
Investment Repairs				0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28			2.25
TOTAL CASH OVERHEAD COSTS	100.00			2.92	2.92	2.92	2.92	9.63	2.92	2.92	2.92			136.78
TOTAL CASH COSTS/ACRE	100.00			43.14	34.21	84.25	48.91	68.41	51.54	62.47	13.62			513.25
TOTAL CASH COSTS/TON	18.18			7.84	6.22	15.32	8.89	12.44	9.37	11.36	2.48			93.32

Table 7.

U.C. COOPERATIVE EXTENSION  
 WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS  
 FOR ESTABLISHMENT AND PRODUCTION YEARS  
 MONO AND INYO COUNTIES - 1993

ANNUAL EQUIPMENT COSTS

Yr	Description *	Price	Yrs Life	- Non-Cash Over. Depre- ciation	Interest	- Cash Overhead - Insur- ance	Taxes	Total
<i>EQUIPMENT FOR ESTABLISHMENT YEAR ONLY:</i>								
93	140 HP 2WD Tractor	71232	10	6410.90	1567.10	195.89	391.78	8565.67
93	Disk - 16' Stubble	23533	15	1412.00	517.72	64.71	129.43	2123.86
93	Grain Drill - 13'	8965	7	1152.57	197.24	24.65	49.31	1423.77
93	Plow - 4 Bottom 16"	8300	15	498.00	182.60	22.83	45.65	749.08
93	Subsoiler - 8' 3 Shank	1966	15	64.40	59.32	7.42	14.83	145.97
93	Triplane - 16'	18856	15	1131.33	414.84	51.85	103.71	1701.73
Subtotal:		131500		9462.86	2893.00	361.14	723.25	13440.75
<i>EQUIPMENT FOR ESTABLISHMENT AND PRODUCTION YEARS:</i>								
93	66 HP 2WD Tractor	30224	10	2720.20	664.92	83.11	166.23	3634.46
93	Pickup Truck 1/2 Ton	17240	7	2216.57	379.28	47.41	94.82	2738.08
93	Spreader - 20'	3935	10	354.10	86.58	10.82	21.64	473.14
Subtotal:		49750		3699.64	1094.50	136.81	273.63	5204.58
<i>EQUIPMENT FOR PRODUCTION YEAR ONLY:</i>								
93	Baler - Engine	44540	8	5010.75	979.88	122.49	244.97	6358.09
93	Baler - Engine	44540	8	5010.75	979.88	122.49	244.97	6358.09
93	Balewagon - SP	100368	10	9033.10	2208.10	276.01	552.03	12069.24
93	Rake - CD 20'	17792	10	1601.30	391.42	48.93	97.85	2139.50
93	Sprayer - 300 Gal Trailer	4965	10	446.80	109.24	13.65	27.31	597.00
93	Swather - SP 14'	59399	10	5346.50	1306.66	163.33	326.67	7143.16
TOTAL		261300		28251.00	5748.60	718.57	1437.15	36155.32
50% of New Cost **		221275		20706.75	4868.05	608.51	1217.02	27400.33

\* Description abbreviations:  
 WD = Wheel Drive  
 SP = Self Propelled  
 CD = Center Delivery  
 \*\* Used to reflect a mix of new and used equipment.

ANNUAL INVESTMENT COSTS

Yr	Description	Price	Yrs Life	- Non-Cash Over. Depre- ciation	Interest	- Cash Overhead - Insur- ance	Taxes	Repairs	Total
<i>INVESTMENT</i>									
	Buildings	67600	25	2704.00	1352.00	169.00	338.00	100.00	4663.00
	*Establishment Cost	176005	7	25143.50	3520.10	440.01	880.03	0.00	29983.64
	Fuel Tanks & Pumps	8050	20	402.50	161.00	20.13	40.25	125.00	748.88
	Fuel Wagon	1560	10	141.00	34.20	4.28	8.55	50.00	238.03
	Hay Barns - 2 @ 1000	40000	20	2000.00	800.00	100.00	200.00	200.00	3300.00
	Motorcycle	1040	10	93.60	22.88	2.86	5.72	50.00	175.06
	Shop Tools	10400	15	624.00	228.80	28.60	57.20	100.00	1038.60
	Wheel Line Sprinkler Sys.	373714	30	11211.40	8221.70	1027.71	2055.43	500.00	23016.24
TOTAL INVESTMENT		678369		42320.00	14340.68	1792.59	3585.18	1125.00	63163.45

\* For production year only.

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land Rent	500.00	acre	100.00	50000.00
Liability Insurance	500.00	acre	1.10	550.00
Office Expense	500.00	acre	20.00	10000.00

U.C. COOPERATIVE EXTENSION  
 HOURLY EQUIPMENT COSTS  
 FOR ESTABLISHMENT AND PRODUCTION YEARS  
 INYO & MONO COUNTIES - 1993

Table 8.

Yr	Description	COSTS PER HOUR								Total Costs/Hr.
		Actual Hours Used	-Non-Cash Over- Depre- ciation	Over.- Interest	- Cash Overhead - Insur- ance	Taxes	Repairs	Operating Fuel & Lube	Total Oper.	
92	140 HP 2WD Tractor	946.2	3.39	0.83	0.10	0.21	3.56	11.01	14.57	19.10
93	66 HP 2WD Tractor	952.6	1.43	0.35	0.04	0.09	1.38	3.39	4.77	6.68
93	Baler - Engine	308.0	8.13	1.59	0.20	0.40	5.31	2.99	8.30	18.62
93	Baler - Engine	308.0	8.13	1.59	0.20	0.40	5.31	2.99	8.30	18.62
93	Balewagon - SP	275.0	16.42	4.01	0.50	1.00	16.06	8.05	24.11	46.05
92	Disk - 16' Stubble	150.0	4.71	1.73	0.22	0.43	5.64	0.00	5.64	12.71
92	Grain Drill - 13'	65.0	8.87	1.52	0.19	0.38	3.74	0.00	3.74	14.70
93	Pickup Truck 1/2 Ton	53.4	20.75	3.55	0.44	0.89	2.54	2.99	5.53	31.17
92	Plow - 4 Bottom 16"	200.0	1.25	0.46	0.06	0.11	1.99	0.00	1.99	3.86
93	Rake - CD 20'	136.0	5.89	1.44	0.18	0.36	3.57	0.00	3.57	11.44
93	Sprayer - 300 Gal Trailer	120.0	1.86	0.46	0.06	0.11	2.08	0.00	2.08	4.56
93	Spreader - 20'	50.0	3.54	0.87	0.11	0.22	1.98	0.00	1.98	6.71
92	Subsoiler - 8' 3 Shank	165.0	0.20	0.18	0.02	0.04	0.47	0.00	0.47	0.91
93	Swather - SP 14'	440.0	6.08	1.48	0.19	0.37	11.92	4.60	16.52	24.64
92	Triplane - 16'	207.0	2.73	1.00	0.13	0.25	2.28	0.00	2.28	6.39

\* Description abbreviations:  
 WD = Wheel Drive  
 SP = Self Propelled  
 CD = Center Delivery

Table 9.

U.C. COOPERATIVE EXTENSION  
RANGING ANALYSIS  
INYO & MONO COUNTIES - 1993

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE ALFALFA HA

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	YIELD (TON/ACRE)						
	4.0	4.5	5.0	5.5	6.0	6.5	7.0
<i>OPERATING COSTS/ACRE:</i>							
Cultural Cost	265	265	265	265	265	265	265
Harvest Cost	75	83	92	101	109	118	127
Interest on operating capital	10	10	10	10	10	11	11
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>349</b>	<b>358</b>	<b>367</b>	<b>375</b>	<b>384</b>	<b>393</b>	<b>402</b>
<b>TOTAL OPERATING COSTS/TON</b>	<b>87.17</b>	<b>79.46</b>	<b>73.30</b>	<b>68.26</b>	<b>64.06</b>	<b>60.50</b>	<b>57.45</b>
CASH OVERHEAD COSTS/ACRE	137	137	137	137	137	137	137
<b>TOTAL CASH COSTS/ACRE</b>	<b>485</b>	<b>494</b>	<b>503</b>	<b>512</b>	<b>521</b>	<b>530</b>	<b>539</b>
<b>TOTAL CASH COSTS/TON</b>	<b>121.36</b>	<b>109.86</b>	<b>100.66</b>	<b>93.13</b>	<b>86.85</b>	<b>81.54</b>	<b>76.99</b>
NON-CASH OVERHEAD COSTS/ACRE	152	152	152	152	152	152	152
<b>TOTAL COSTS/ACRE</b>	<b>638</b>	<b>647</b>	<b>656</b>	<b>665</b>	<b>674</b>	<b>682</b>	<b>691</b>
<b>TOTAL COSTS/TON</b>	<b>159.47</b>	<b>143.73</b>	<b>131.14</b>	<b>120.84</b>	<b>112.25</b>	<b>104.99</b>	<b>98.77</b>

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*NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR ALFALFA HAY*

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PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	4.0	4.5	5.0	5.5	6.0	6.5	7.0
75.00	-34	-4	27	57	87	118	148
80.00	-13	20	53	86	119	152	185
85.00	8	43	79	115	150	186	222
90.00	29	67	105	144	182	220	258
95.00	50	91	132	172	213	254	295
100.00	71	114	158	201	245	288	332
105.00	92	138	184	230	276	322	368

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*NET RETURNS PER ACRE ABOVE CASH COSTS FOR ALFALFA HAY*

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PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	4.0	4.5	5.0	5.5	6.0	6.5	7.0
75.00	-171	-141	-110	-80	-49	-19	12
80.00	-150	-117	-84	-51	-18	15	48
85.00	-129	-93	-58	-22	14	49	85
90.00	-108	-70	-31	7	45	83	122
95.00	-87	-46	-5	36	77	117	158
100.00	-66	-23	21	64	108	151	195
105.00	-45	1	47	93	139	186	232

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*NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR ALFALFA HAY*

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PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	4.0	4.5	5.0	5.5	6.0	6.5	7.0
75.00	-323	-293	-263	-232	-202	-171	-141
80.00	-302	-269	-236	-203	-170	-137	-104
85.00	-281	-246	-210	-174	-139	-103	-68
90.00	-260	-222	-184	-146	-107	-69	-31
95.00	-239	-199	-158	-117	-76	-35	6
100.00	-218	-175	-131	-88	-44	-1	43
105.00	-198	-151	-105	-59	-13	33	79

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Table 10.

U.C. COOPERATIVE EXTENSION  
 COSTS AND RETURNS / BREAKEVEN ANALYSIS  
 INYO & MONO COUNTIES - 1993

===== 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)
Alfalfa Hay	519	376	143	513	6	666	-147

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===== 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)
Alfalfa Hay	259500	188234	71266	256625	2875	332829	-73329

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===== BREAKEVEN PRICES PER YIELD UNIT =====

CROP	Base Yield (Units/Acre)	Yield Units	----- Breakeven Price To Cover -----		
			Operating Costs	Cash Costs	Total Costs
Alfalfa Hay	5.5	ton	65.28	89.00	115.43

----- \$ per Yield Unit -----

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===== BREAKEVEN YIELDS PER ACRE =====

CROP	Yield Units	Base Price (\$/Unit)	----- Breakeven Yield To Cover -----		
			Operating Costs	Cash Costs	Total Costs
Alfalfa Hay	ton	90.00	4.0	5.4	7.1

----- Yield Units / Acre -----

=====