
**UNIVERSITY OF CALIFORNIA COOPERATIVE
EXTENSION**

2008

**SAMPLE COSTS
TO ESTABLISH AND PRODUCE
PASTURE**



**IRRIGATED
IN THE INTERMOUNTAIN REGION
SHASTA, LASSEN, AND MODOC COUNTIES**

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INTRODUCTION

Sample costs to establish a pasture stand and produce pasture in the Intermountain Region of Shasta, Lassen, and Modoc Counties are shown in this study. The study is intended as a guide only, and 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, but will not apply to every farm situation. Sample costs for labor, materials, equipment and custom services are based on current figures. “*Your Costs*” columns in Tables 1 and 2, are provided for you to enter your costs.

The hypothetical farm operations, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of 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 are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-2414. Current studies can be downloaded from the department website <http://coststudies.ucdavis.edu/> or obtained from the local county UC Cooperative Extension offices.

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ASSUMPTIONS

The following assumptions refer to Tables 1 to 11 and pertain to sample costs to establish a pasture stand, produce pasture and pasture hay in the Intermountain Region of Shasta, Lassen, and Modoc Counties. Practices described are not University of California recommendations, but represent production practices and materials considered typical of a well-managed pasture stand in the Intermountain Region. Costs, materials, and practices in this study will not be applicable to all situations. Establishment and cultural practices vary among growers within the region; variations can be significant. **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.**

Farm. The hypothetical farm consist of 1,000 contiguous acres of land on which 200 acres previously planted to grain are being planted to pasture, 800 acres are improved and unimproved range. The pasture land is owned by the grower at a price of \$2,500 per acre. The farm also includes cattle that are grazed on the range or pasture and also fed pasture hay. The cattle operation is considered a separate enterprise. The owner manages the farm and cattle.

STAND ESTABLISHMENT

TABLES 1 AND 2

Land Preparation. The ground is chiselled 20 to 32 inches deep to fracture the soil and improve water infiltration. The field is disced one time to break up large clods, creating better seed-to-soil contact for good germination. Borders (levees) for irrigation checks are made at periodic intervals through the field. The land is custom laser leveled so the fields are graded and passed over with a harrow roller to let water irrigate the pasture efficiently. A soil test is done prior to any field work to determine fertilizer and nutrient levels. All land and establishment preparation are done by a custom operator.

Planting. A cultipacker is used to firm the seedbed prior to and after planting. In late August, orchardgrass at 12 pounds or tall fescue at 16 pounds per acre plus clover seed (ladino, alsike, strawberry, or white Dutch) at 2 – 4 pounds (two pounds in this study) per acre is planted 1/4 to 1/2 inch deep. A custom operator does the planting with a 16 foot grain drill or broadcast seeder. Stand life in this study is 20 years.

Fertilization. Prior to planting, fertilizers are spread and incorporated by discing. Elemental sulfur (recommended by Farm Advisors) is applied at 200 pounds per acre while about 25% of acreage in the Intermountain Region need P₂O₅. The fertilizers are custom spread by a fertilizer company at a cost of \$8.50 per acre. Growers should apply fertilizer or soil amendments after soil tests determine pH and nutrient levels. Plant tissue tests are recommended in subsequent years.

Irrigation. During August and September of the establishment year, irrigation water is applied preplant, immediately after planting, and 10 to 14 days later. The combined total of the three irrigations is about six acre-inches of water.

Weed Control. Grasses and broadleaf weeds can compete with the seedlings during stand establishment, but are not always a problem. In this study Roundup is applied at a rate of 1.0 quart per acre prior to planting by an ATV with a sprayer.

Harvest. August plantings will not produce a crop in the first year.

PRODUCTION OPERATING COSTS

TABLES 3 TO 10.

Irrigation. Irrigation begins in May and continues into September. Three acre-feet of water at \$21.24 per acre-foot or \$1.77 per acre-inch is applied by border-flood irrigation.

Fertilization. Fertilizer is applied in March and in June after hay harvest. Ammonium Sulfate (21-0-0-24S) at 200 pounds per acre or 42 pounds of N per acre and 48 pounds of sulfur is applied in March to cover sulfur and nitrogen deficiency, common in Lassen County. Urea is added annually at 100 pounds per acre or 46 pounds of N and is applied in June immediately following hay harvest.

Pest Management. For pesticide information, pest identification, monitoring, and management visit the UC IPM website at <http://www.ipm.ucdavis.edu/>. Written recommendations are required for many pesticides, and are made by licensed Pest Control Advisors. For information on pesticide use permits, contact the local county agricultural commissioner's office.

Weeds. Spot sprays with Roundup and 2,4-D Amine in March and April are applied to approximately 1% of the acres.

Insects. Are not normally a considered a problem.

Vertebrates. Pocket gophers (*Thomomys spp.*), ground squirrels (*Spermophilus spp.*), and meadow mice (*Microtus spp.*) cause problems in pasture stands. Poison bait purchased from the local Agricultural Commissioner is used to control these pests. In this study, vertebrate pest treatment is applied to 25% of the acres in March. The cost for rodent bait in the study is an average of the separate costs of gopher, squirrel and mouse baits.

Other Cultural Practices. A tractor and harrow are used to break up cow paddies in March. An All Terrain Vehicle (ATV, four wheel drive) is used for spot spraying, checking bait stations, installing the electric fence, irrigating, and inspecting cattle.

Temporary Fencing. Two to four paddocks are created with an electric fence for grazing cattle. Insulated t-posts are placed in the ground to which the wire is attached. The fence is installed after the first harvest and removed at the end of the season.

Harvest. The crop is custom harvested in June. The chambered bales are for winter-feeding or off-farm sales. The pasture is cut with a self-propelled swather, cured or dried in windrows for several days and then turned with a center-delivery rake. Once the hay has dried to the correct moisture content, it is baled with a pull-type baler into 100 to 125 pound for small bales. The bales are picked up with a balewagon that moves them from the field and roadsides (stacks) the bales. Instead of baling the first cutting for hay some growers graze the pasture. The regrowth is grazed from July through October.

Custom Harvest. In this study, the custom harvester charges \$41 per ton to swath, rake, bale, roadside (pickup bales and stack), and load. Many harvesting companies swath, rake, bale, roadside, and load the harvested alfalfa for a single fee. Fees to swath, rake, bale, roadside, and load the hay range from \$40 to \$48 per hay ton and are usually based on a minimum of one-ton of hay per acre. Some companies will hire out for the individual operations and charge accordingly, but these fees when added together may be

higher than the fee quoted for all operations. Individually, swathing ranges around \$12 to \$15 per acre, raking \$5 to \$6 per acre, baling \$15 to \$18 per ton, and roadsiding \$5 to \$8 per ton.

Yield. The crop is assumed to yield 2.5 tons of hay per acre per year. Stocking rate of beef cattle is approximately one cow/calf per acre or two yearlings per acre. The study summarizes grazing yield in total Animal Unit Months (AUM). The total grazing yield assumed in this study is four AUMs. AUMs can be converted to approximate hay tons equivalent. For air-dried irrigated pasture hay, 800 pounds of hay is equivalent to 1 AUM or 2.5 AUM is equivalent to one ton of pasture hay.

Returns. Based on current markets for meadow hay, an estimated price of \$220 per ton is used to calculate returns. Returns will vary during the season, depending upon the hay and grazing markets. Based on lease market rates, the price ranchers are paying for good summer pasture, the grower assumes a price of \$27 per AUM to calculate returns.

Labor. Labor rates of \$16.47 per hour for machine operators and \$10.88 for general labor includes payroll overhead of 39%. The basic hourly wages are \$11.85 for machine operators and \$8.00 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for beef production (code 0038), and a percentage for other possible benefits. Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2008 (California Department of Insurance). Labor for operations involving machinery are 20% higher than the operation time given in Table 1 and 4 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

Pickup and ATV Use. The three-quarter ton pickup is used by the grower for one-half personal and one-half business use. The ATV is used to spot spray, check irrigation, pests, and inspect and move the electric fence and cattle.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower and fuel type. Prices for on-farm delivery of diesel and gasoline are \$3.57 and \$3.54 per gallon, respectively. Fuel costs are derived from American Automobile Association (AAA) and Energy Information Administration (EIA) 2008 monthly 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 tax, which are refundable for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in Table 1 are determined by multiplying the total hourly operating cost in Table 6 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.

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 6.75% per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post harvest operations is discounted back to the last harvest month using a negative interest charge.

Risk. The associated 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 pasture production.

CASH OVERHEAD

Assumptions in this section refer to the cash overhead and capital recovery sections in Tables 1 – 6 and 8 – 9. One-half of the annual overhead costs for the 200 acres in the establishment year (Tables 1 and 2) are allocated to the previous crop.

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm, not to a particular operation. These costs include property taxes, interest, office expense, liability and property insurance, and investment repairs (buildings and irrigation equipment). Employee benefits, payroll taxes and workman's compensation insurance are included in labor costs and not under cash overhead.

Property Taxes. 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.

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 0.740% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,216 for the entire farm or \$1.22 per acre.

Office Expense. Office and business expenses for 1,000 acres are estimated at \$2,630 annually or \$2.63 per acre. These expenses include office supplies, telephones, accounting, legal fees, office and shop utilities, and miscellaneous overhead expenses.

Manager's Salary. Although the farm is managed by the owner, a salary of \$35,556 per year is used to show a management cost. Adding 39% for federal and state payroll taxes, insurance, and miscellaneous benefits, the total cost is \$49,423.

Investment Repairs. Annual repairs on investments or capital recovery items that require maintenance are calculated as two percent of the purchase price.

NON-CASH OVERHEAD

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment and is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). The capital recovery costs are 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 formula for the calculation of the annual capital recovery costs is;

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

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASAE by the annual hours of use in the operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is the purchase price because land does not depreciate. The purchase price and salvage value for equipment and investments are shown in Tables 3 and 8.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. The amortization factor is a table value that corresponds to the interest rate and equipment life.

Interest Rate. The interest rate of 4.25% used to calculate capital recovery cost is used to calculate capital recovery cost is the effective long-term interest rate in April 2008. The interest rate 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.

Shop. An 8,000 square foot building used for equipment maintenance and storage.

Tools. Includes shop equipment/tools, and hand tools used in the shop and field.

Electric Fence. An energizer (electrical unit), wire, fiberglass posts, and metal T-posts for corner posts for 4 paddocks on the 200 acres

Irrigation System. Water cost varies across the Intermountain Region depending on well characteristics or irrigation district. The irrigation system consists of a 40 horsepower electric pump used to lift the water from a river or ditch and an underground main line and lateral lines with alfalfa valves that delivers the water to the field.

Land. Land suitable for pasture production can vary widely in value across the region. Prices range from \$1,750 per acre to \$4,000. Rangeland is valued at \$175 to \$850 per acre. The land in this study is owned by the grower and cost \$2,500 per acre.

Livestock Facility. These facilities for handling the grazing cattle are estimated costs for corrals, loading and squeeze chutes.

Establishment Costs. Costs to establish the pasture stand are used to determine capital recovery expenses, depreciation, and interest on investment, during the production years. The establishment cost is the sum of cash costs for land preparation, planting, production expenses, and cash overhead for establishing the pasture. The Total Cash Cost in the first year shown in Tables 1 and 2 represents the establishment cost per acre. For this study, the cost is \$712 per acre or \$71,200 for the entire stand. The pasture stand establishment cost is amortized over the 20-year stand life.

Equipment. Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs for equipment and other investments are shown in Tables 3 and 8. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs.

Both of the overhead factors have been discussed in previous sections. The operating costs consist of repairs, fuel, and lubrication and are discussed under operating costs.

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

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Table 1.

UC COOPERATIVE EXTENSION
 COSTS PER ACRE TO ESTABLISH PASTURE
 INTERMOUNTAIN REGION – 2008
 IRRIGATED

Labor Rate: \$16.47/hr. machine labor
 \$10.88/hr. non-machine labor

Short Term Interest Rate: 6.75%

Operation	Operation Time (Hrs/A)	----- Cash and Labor Costs per Acre -----				Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:							
Chisel Ground	0.00	0	0	0	75	75	
Fertilize - Sulfur	0.00	0	0	20	9	28	
Fertilize - 11-52-0 on 25% of Acreage	0.00	0	0	15	2	17	
Stubble Disc	0.00	0	0	0	12	12	
Make Borders	0.00	0	0	0	5	5	
Float Field	0.00	0	0	0	12	12	
Roll Field	0.00	0	0	0	9	9	
Weed Control - Preplant Herbicide	0.11	2	1	17	0	20	
Plant Pasture	0.00	0	0	69	8	77	
Irrigate	0.40	4	0	11	0	15	
Pickup Truck Use	0.29	6	4	0	0	10	
ATV Use	<u>0.29</u>	<u>6</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>7</u>	
TOTAL CULTURAL COSTS	1.08	18	6	132	131	287	
Interest on Operating Capital @ 6.75%						9	
TOTAL OPERATING COSTS/ACRE		18	6	132	131	296	
CASH OVERHEAD:							
Office Expense						1	
Liability Insurance						1	
Manager's Salary						27	
Property Taxes						15	
Property Insurance						11	
Investment Repairs						<u>4</u>	
TOTAL CASH OVERHEAD COSTS						60	
TOTAL CASH COSTS/ACRE						356	
NON-CASH OVERHEAD:							
Investment		Per producing <u> Acre</u>		-- Annual Cost -- <u>Capital Recovery</u>			
Land		1,389		59		59	
Irrigation System		9		1		1	
Fuel Tanks & Pumps		2		0		0	
Hay Barn - 500 Tons		28		2		2	
Shop Building		115		8		8	
Shop Tools		8		1		1	
Electric Fencing		4		0		0	
Equipment		<u>26</u>		<u>3</u>		<u>3</u>	
TOTAL NON-CASH OVERHEAD COSTS		1,580		74		74	
TOTAL COSTS/ACRE						430	

Table 2.

UC COOPERATIVE EXTENSION
MATERIAL AND INPUT COSTS TO ESTABLISH PASTURE
INTERMOUNTAIN REGION – 2008
IRRIGATED

			Price or	Value or	Your
	Quantity/Acre	Unit	Cost/Unit	Cost/Acre	Cost
Labor Rate: \$16.47/hr. machine labor \$10.88/hr. non-machine labor					
Short Term Interest Rate: 6.75%					
OPERATING COSTS					
Custom:					
Chisel - Custom	1.00	Acre	75.00	75	
Ground Application	1.25	Ton	8.50	11	
Stubble Disc - Custom	1.00	Acre	12.00	12	
Borders - Custom	0.30	Acre	16.00	5	
Float - Custom	1.00	Acre	12.00	12	
Roll Field - Custom	1.00	Acre	9.00	9	
Plant - Custom	1.00	Acre	8.00	8	
Fertilizer:					
Elemental Sulfur	200.00	Lb	0.10	20	
11-52-0	25.00	Lb	0.60	15	
Herbicide:					
Roundup Ultra Max	2.00	Pint	8.58	17	
Seed:					
Seed - Orchardgrass	12.00	Lb	3.33	40	
Seed - Tall Fescue	16.00	Lb	1.48	24	
Seed - Ladino	1.00	Lb	2.71	3	
Seed - White Dutch	0.50	Lb	2.71	1	
Seed - Alsike	0.50	Lb	2.85	1	
Irrigation:					
Water	6.00	AcIn	1.77	11	
Labor (machine)	0.81	Hrs	16.47	13	
Labor (non-machine)	0.40	Hrs	10.88	4	
Fuel - Gas	1.12	Gal	3.57	4	
Lube				1	
Machinery repair				1	
Interest on Operating Capital @ 6.75%				9	
TOTAL OPERATING COSTS/ACRE				296	
CASH OVERHEAD COSTS:					
Office Expense				1	
Liability Insurance				1	
Manager's Salary				27	
Property Taxes				15	
Property Insurance				11	
Investment Repairs				4	
TOTAL CASH OVERHEAD COSTS/ACRE				60	
TOTAL CASH COSTS/ACRE				356	
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):					
Land				59	
Irrigation System				1	
Fuel Tanks & Pumps				0	
Hay Barn - 500 Tons				2	
Shop Building				8	
Shop Tools				1	
Electric Fencing				0	
Equipment				3	
TOTAL NON-CASH OVERHEAD COST/ACRE				74	
TOTAL COSTS/ACRE				430	

Table 3.

UC COOPERATIVE EXTENSION
ANNUAL EQUIPMENT COSTS PER ACRE TO ESTABLISH PASTURE
INTERMOUNTAIN REGION – 2008
IRRIGATED

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead -		Total
						Insur- ance	Taxes	
08	100 Gallon Sprayer with Boom for ATV	5,218	10	923	575	23	31	629
08	ATV	6,459	7	2,450	778	33	45	856
08	Pickup - 4WD 3/4 Ton	36,000	7	13,656	4,338	184	248	4,770
	TOTAL	47,677		17,029	5,691	239	324	6,254
	60% of New Cost *	28,606		10,217	3,415	144	194	3,752

Table 4.

HOURLY EQUIPMENT COSTS PER ACRE TO ESTABLISH PASTURE
INTERMOUNTAIN REGION – 2008
IRRIGATED

HOURLY EQUIPMENT COSTS

Yr	Description	----- COSTS PER HOUR -----							Total Costs/Hr.
		Actual Hours Used	- Cash Overhead -			----- Operating -----		Total Oper.	
			Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube		
08	100 Gallon Sprayer with Boom for ATV	149.8	2.30	0.09	0.12	1.41	0.00	1.41	3.93
08	ATV	284.3	1.64	0.07	0.09	0.48	2.74	3.22	5.03
08	Pickup - 4WD 3/4 Ton	284.5	9.15	0.39	0.52	2.67	12.32	14.99	25.05

Table 5.

UC COOPERATIVE EXTENSION
COSTS PER ACRE TO PRODUCE PASTURE AND HAY
INTERMOUNTAIN REGION – 2008
IRRIGATED

Labor Rate: \$16.47/hr. machine labor
\$10.88/hr. non-machine labor

Short Term Interest Rate: 6.75%

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent			
Cultural:								
Fertilize - 21-0-0-24	0.00	0	0	45	9	54		
Weed Control - Spot Spray 2X	0.02	0	0	2	0	3		
Harrow Pasture	0.12	2	1	0	0	4		
Rodent Control - Rodent Bait	0.06	1	0	1	0	2		
Irrigate 6X	1.20	13	0	74	0	87		
Fertilize - 46-0-0 (Urea)	0.00	0	0	41	9	49		
Make Electric Fence	0.10	1	0	0	0	1		
Remove Electric Fence	0.10	1	0	0	0	1		
Pickup Truck Use	0.29	6	4	0	0	10		
ATV Use	0.29	6	1	0	0	7		
TOTAL CULTURAL COSTS	2.17	30	7	163	17	217		
Harvest:								
Harvest Hay	0.00	0	0	0	45	45		
Graze Pasture - July	0.05	1	0	0	0	1		
Graze Pasture - August	0.05	1	0	0	0	1		
Graze Pasture - September	0.05	1	0	0	0	1		
Graze Pasture - October	0.05	1	0	0	0	1		
TOTAL HARVEST COSTS	0.20	2	0	0	45	47		
Interest on Operating Capital @ 6.75%						1		
TOTAL OPERATING COSTS/ACRE		33	7	163	62	266		
TOTAL OPERATING COSTS/AUM						88.63		
CASH OVERHEAD:								
Office Expense						3		
Liability Insurance						1		
Manager's Salary						49		
Property Taxes						29		
Property Insurance						21		
Investment Repairs						8		
TOTAL CASH OVERHEAD COSTS						111		
TOTAL CASH COSTS/ACRE						365		
TOTAL CASH COSTS/AUM								
NON-CASH OVERHEAD:								
Investment		Per producing Acre		-- Annual Cost -- Capital Recovery				
Land		2,500		106		106		
Irrigation System		16		1		1		
Fuel Tanks & Pumps		4		0		0		
Hay Barn - 500 Tons		51		4		4		
Shop Building		207		15		15		
Shop Tools		14		1		1		
Electric Fencing		6		0		0		
Pasture Establishment Cost		356		27		27		
Equipment		28		3		3		
TOTAL NON-CASH OVERHEAD COSTS		3,180		157		157		
TOTAL COSTS/ACRE						522		
TOTAL COSTS/AUM								

Table 6.

UC COOPERATIVE EXTENSION
 COSTS AND RETURNS PER ACRE TO PRODUCE PASTURE AND HAY
 INTERMOUNTAIN REGION – 2008
 IRRIGATED

Labor Rate: \$16.47/hr. machine labor
 \$10.88/hr. non-machine labor

Short Term Interest Rate: 6.75%

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Pasture - Hay	2.5	Ton	220.00	550	
Pasture - Graze					
TOTAL GROSS RETURNS FOR HAY					
OPERATING COSTS					
Fertilizer:					
21-0-0-24	42.00	Lb N	1.072	45	
Urea 46-0-0	46.00	Lb N	0.891	41	
Custom:					
Ground Application	2.00	Acre	8.50	17	
Hay Harvest	1.00	Acre	45.00	45	
Herbicide:					
Roundup Ultra Max	0.20	Pint	8.58	2	
2,4-D Amine	0.20	Pint	2.79	1	
Rodenticide:					
Rodent Bait	0.25	Lb	2.80	1	
Irrigation:					
Water	42.00	AcIn	1.77	74	
Labor (machine)	0.92	Hrs	16.47	15	
Labor (non-machine)	1.60	Hrs	10.88	17	
Fuel - Gas	1.10	Gal	3.57	4	
Fuel - Diesel	0.25	Gal	3.54	1	
Lube				1	
Machinery repair				1	
Interest on Operating Capital @ 6.75%				1	
TOTAL OPERATING COSTS/ACRE				266	
TOTAL OPERATING COSTS/AUM				88.63	
NET RETURNS ABOVE OPERATING COSTS					
CASH OVERHEAD COSTS:					
Office Expense				3	
Liability Insurance				1	
Manager's Salary				49	
Property Taxes				29	
Property Insurance				21	
Investment Repairs				8	
TOTAL CASH OVERHEAD COSTS/ACRE				111	
TOTAL CASH COSTS/ACRE				365	
TOTAL CASH COSTS/AUM					
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):					
Land				106	
Irrigation System				1	
Fuel Tanks & Pumps				0	
Hay Barn - 500 Tons				4	
Shop Building				15	
Shop Tools				1	
Electric Fencing				0	
Pasture Establishment Cost				27	
Equipment				3	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				157	
TOTAL COSTS/ACRE				522	
TOTAL COSTS/AUM					
NET RETURNS ABOVE TOTAL COSTS					

Table 7.

UC COOPERATIVE EXTENSION
MONTHLY CASH COSTS PER ACRE TO PRODUCE PASTURE AND HAY
INTERMOUNTAIN REGION – 2008
IRRIGATED

Beginning JAN 08	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC 08	08	08	08	08	08	08	08	08	08	08	08	08	
Cultural:													
Fertilize - 21-0-0-24			54										54
Weed Control - Spot Spray 2X			2	1									3
Harrow Pasture			4										4
Rodent Control - Rodent Bait 25% of Acreage				2									2
Irrigate 6X					13	13	23	13	13	13			87
Fertilize - 46-0-0 (Urea)						49							49
Make Electric Fence						1							1
Remove Electric Fence										1			1
Pickup Truck Use			1	1	1	1	1	1	1	1	1		10
ATV 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>7</u>
TOTAL CULTURAL COSTS			61	5	15	65	25	15	15	16			217
Harvest:													
Harvest Hay						45							45
Graze Pasture - July							1						1
Graze Pasture - August								1					1
Graze Pasture - September									1				1
Graze Pasture - October										<u>1</u>			<u>1</u>
TOTAL HARVEST COSTS						45	1	1	1	1			47
Interest on Operating Capital @ 6.75%			0	0	0	1	0	0	0	0			1
TOTAL OPERATING COSTS/ACRE			61	5	15	112	26	15	15	16			266
TOTAL OPERATING COSTS/AUM			20.47	1.78	5.10	37.17	8.55	5.05	5.07	5.45			88.63
OVERHEAD:													
Office Expense				0	0	0	0	0	0	0			3
Liability Insurance		1											1
Manager's Salary			6	6	6	6	6	6	6	6			49
Property Taxes		14					14						29
Property Insurance		11					11						21
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>8</u>
TOTAL CASH OVERHEAD COSTS		27	1	7	7	7	7	32	7	7	7	1	111
TOTAL CASH COSTS/ACRE		27	1	69	12	22	119	58	22	22	11	1	365
TOTAL CASH COSTS/AUM		9.00	0.22	22.86	4.17	7.49	39.56	19.25	7.46	7.48	3.60	0.22	121.54

Table 8.

UC COOPERATIVE EXTENSION
WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
INTERMOUNTAIN REGION – 2008
IRRIGATED

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead -			Total
						Insur- ance	Taxes		
08	100 Gallon Sprayer with Boom For ATV	5,218	10	923	575	23	31		629
08	40 HP 4WD Tractor	25,540	12	6,385	2,342	118	160		2,620
08	ATV	6,459	7	2,450	778	33	45		856
08	Harrow - 12'	2,120	20	110	156	8	11		175
08	Pickup - 4WD 3/4 Ton	36,000	7	13,656	4,338	184	248		4,770
08	Spreader -Spinner Pull Type	855	10	151	94	4	5		103
TOTAL		76,192		23,675	8,283	370	499		9,152
60% of New Cost *		45,715		14,205	4,970	222	300		5,491

* 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									
Electric Fencing	6,300	20	630	453	26	35	173		687
Fuel Tanks & Pumps	3,617	20	362	260	15	20	100		395
Hay Barn - 500 Tons	50,638	20	5,064	3,643	206	279	1,392		5,520
Irrigation System	15,750	25	1,575	998	64	87	433		1,582
Pasture Establishment Cost	71,200	20		5,356	263	356	0		5,975
Land	2,500,000	40	2,500,000	106,250	18,500	25,000	0		149,750
Shop Building	206,688	20	20,669	14,871	841	1,137	5,684		22,533
Shop Tools	13,509	20	1,351	972	55	74	186		1,287
TOTAL INVESTMENT	2,867,702		2,529,651	132,804	19,970	26,987	7,968		187,728

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/		Price/ Unit	Total Cost
	Farm	Unit		
Liability Insurance	2,900	Acre	0.50	1,450
Manager's Salary	1,000	Acre	49.42	49,420
Office Expense	1,000	Acre	2.63	2,630

Table 9.

UC COOPERATIVE EXTENSION
HOURLY EQUIPMENT COSTS
INTERMOUNTAIN REGION – 2008
IRRIGATED

Yr	Description	----- COSTS PER HOUR -----							
		Actual Hours Used	- Cash Overhead -				----- Operating -----		
			Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
08	100 Gallon Sprayer with Boom For ATV	139.2	2.48	0.10	0.13	1.41	0.00	1.41	4.12
08	40 HP 4WD Tractor	999.8	1.41	0.07	0.10	1.18	8.00	9.18	10.75
08	ATV	283.6	1.65	0.07	0.09	0.48	2.74	3.22	5.03
08	Harrow - 12'	99.6	0.94	0.05	0.07	0.42	0.00	0.42	1.48
08	Pickup - 4WD 3/4 Ton	284.5	9.15	0.39	0.52	2.67	12.32	14.99	25.05
08	Spreader -Spinner Pull Type	119.9	0.47	0.02	0.03	0.33	0.00	0.33	0.85

Table 10.

UC COOPERATIVE EXTENSION
RANGING ANALYSIS
INTERMOUNTAIN REGION – 2008
IRRIGATED

	YIELD (AUM/ACRE)						
	2.5	3.0	3.5	4.0	4.5	5.0	4.5
COSTS PER ACRE AT VARYING YIELDS FOR PASTURE							
OPERATING COSTS/ACRE:							
Cultural Cost	217	217	217	217	217	217	217
Harvest Cost	47	47	47	47	47	47	47
Interest on Operating Capital	1	1	1	1	1	1	1
TOTAL OPERATING COSTS/ACRE	266	266	266	266	266	266	266
TOTAL OPERATING COSTS/AUM	177	133	106	89	76	66	59
CASH OVERHEAD COSTS/ACRE	111	111	111	111	111	111	111
TOTAL CASH COSTS/ACRE	365	365	365	365	365	365	365
TOTAL CASH COSTS/AUM	243	182	146	122	104	91	81
NON-CASH OVERHEAD COSTS/ACRE	157	157	157	157	157	157	157
TOTAL COSTS/ACRE	522	522	522	522	522	522	522
TOTAL COSTS/AUM	348	261	209	174	149	131	116

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR PASTURE								
PRICE (\$/Unit)		YIELD (Unit)						
Pasture		----- AUM -----						
AUM		2.5	3.0	3.5	4.0	4.5	5.0	4.5
Hay		-----Ton -----						
Ton		1.75	2.00	2.25	2.50	2.75	3.00	3.25
21.00	190.00	111	169	227	285	343	401	459
23.00	200.00	131	193	254	316	377	439	500
25.00	210.00	152	217	282	347	412	477	542
27.00	220.00	172	241	309	378	446	515	583
29.00	230.00	193	265	337	409	481	553	625
31.00	240.00	213	289	364	440	515	591	666
33.00	250.00	234	313	392	471	550	629	708

NET RETURNS PER ACRE ABOVE CASH COSTS FOR PASTURE								
PRICE (\$/Unit)		YIELD (Unit)						
Pasture		----- AUM -----						
AUM		2.5	3.0	3.5	4.0	4.5	5.0	4.5
Hay		-----Ton -----						
Ton		1.75	2.00	2.25	2.50	2.75	3.00	3.25
21.00	190.00	-1	57	115	173	231	289	347
23.00	200.00	20	81	143	204	266	327	389
25.00	210.00	40	105	170	235	300	365	430
27.00	220.00	61	129	198	266	335	403	472
29.00	230.00	81	153	225	297	369	441	513
31.00	240.00	102	177	253	328	404	479	555
33.00	250.00	122	201	280	359	438	517	596

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR PASTURE								
PRICE (\$/Unit)		YIELD (Unit)						
Pasture		----- AUM -----						
AUM		2.5	3.0	3.5	4.0	4.5	5.0	4.5
Hay		-----Ton -----						
Ton		1.75	2.00	2.25	2.50	2.75	3.00	3.25
21.00	190.00	-158	-100	-42	16	74	132	190
23.00	200.00	-138	-76	-15	47	108	170	231
25.00	210.00	-117	-52	13	78	143	208	273
27.00	220.00	-97	-28	40	109	177	246	314
29.00	230.00	-76	-4	68	140	212	284	356
31.00	240.00	-56	20	95	171	246	322	397
33.00	250.00	-35	44	123	202	281	360	439

Table 11.

UC COOPERATIVE EXTENSION
 DETAILS BY OPERATION
 INTERMOUNTAIN REGION – 2008
 IRRIGATED

Operation	Operation Month	Tractor/ Power Unit	Implement	Material	Broadcast Rate/acre	Material Unit
Cultural:						
Fertilize - 21-0-0-24	March	Custom	Ground Application	21-0-0-24	42.00	Lb N
Weed Control - 25% Of Acreage -2X	March	ATV	100 Gal ATV Sprayer w/Boom	Roundup	0.25	Pint
	April	ATV	100 Gal ATV Sprayer w/Boom	2, 4-D	0.25	Pint
Harrow Pasture	March	40 HP 4WD Tractor	Harrow - 12'			
Rodent Control - Rodent Bait	April	ATV	Spreader - Spinner Pull Type	Rodent Bait	0.25	Lb
Irrigate - 7X	May	Labor		Water	6.00	AcIn
	June	Labor		Water	6.00	AcIn
	July	Labor		Water	12.00	AcIn
	August	Labor		Water	6.00	AcIn
	September	Labor		Water	6.00	AcIn
	October	Labor		Water	6.00	AcIn
	Harvst Hay	June	Custom			
Fertilize - 46-0-0 (Urea)	June	Custom	Ground Application	46-0-0	46.00	Lb N
Make Electric Fence	June	Labor				
Graze Pasture	July	Labor				
	August	Labor				
	September	Labor				
	October	Labor				
Remove Electric Fence	October	Labor				
Pickup Truck Use	All Months					
ATV Use	All Months					