UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2002

SAMPLE COSTS TO ESTABLISH AND PRODUCE

PASTURE

SACRAMENTO VALLEY

Flood Irrigation

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UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

SAMPLE COSTS TO
ESTABLISH AND PRODUCE PASTURE
Sacramento Valley -2002

STUDY CONTENTS

INTRODUCTION

Sample costs to establish a pasture stand and produce irrigated pasture in the Sacramento Valley 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, 2, 3 and 4 are provided for entering your farm 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) 752-3589 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) 752-3589. Current studies can be downloaded from the department website http://coststudies.ucdavis.edu or obtained from the local county UC Cooperative Extension offices. Some archived studies are also available on the website.

ASSUMPTIONS

The assumptions refer to Tables 1 to 8 and pertain to sample costs to establish a pasture stand, produce pasture and pasture hay in the Sacramento Valley. Practices described are not University of California recommendations but represent production practices and materials considered typical of a well-managed pasture stand in the Sacramento Valley. Costs, materials, and practices in this study will not be applicable to all situations. Establishment and cultural practices vary among growers within the region. **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 consists of 50 contiguous acres. Pasture is being established and produced on 40 acres that had been previously planted to pasture. The remaining 10 acres are roads, farmstead, and miscellaneous buildings and corrals. The farm also includes cattle that are fed pasture hay and/or grazed on the pasture. The owner manages the farm and cattle.

Stand Establishment Operating Costs

Tables 1 to 2

Land Preparation. The ground is ripped 20 to 32 inches deep to fracture the soil and improve water infiltration. The field is disced with a semi stubble and/or finish disc to break up clods and smooth the surface, creating better seed-to-soil contact for good germination. Borders (levees) for irrigation checks are made at periodic intervals (40 ft in this study) through the field. Border costs include the tractor operations and two men furnished by the custom operator to assist in shoveling and levee building. The land is level, so the fields are floated to remove small high and low spots. A custom operator does all of the land preparation through planting.

Planting. In September, an irrigated pasture mix at 15 to 20 pounds per acre is planted with a Brillion seed planter. A custom operator does the planting. Stand life in this study is 20 years.

Fertilization. Prior to planting, 200 pounds of 16-20-0 is spread and incorporated by discing. A custom operator does the application. Growers should apply fertilizer or soil amendments after appropriate soil and/or tissue testing in the establishment and succeeding years.

Irrigation. Irrigations are done preplant (August), immediately after planting (September), and 10 to 14 days later (October) to germinate the seed. A total of nine acre-inches is applied during the establishment year.

Weed Control. Grasses and broadleaf weeds can compete with the seedlings during stand establishment, but are not often a problem.

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

Production Operating Costs

Tables 3 to 8.

Irrigation. The water is supplied by an irrigation district and is gravity fed into the growers irrigation system. Water districts in the Sacramento Valley were randomly selected for water costs and an average cost selected. Costs vary among districts and depending on the district, the rates are either metered (per acre foot) or non-metered rates (per acre). Four-acre feet of water, converted to per-acre costs ranged from $12 to $140 or $3 to $35 per acre-foot. Irrigation begins in April and continues into October. Four and one-half acre-feet of water at $15.77 per acre-foot or $1.31 per acre-inch is applied by border-flood irrigation.

Fertilization. Ammonium sulfate (21-0-0-24S) at 42 pounds of N is applied in March. The fertilizer also supplies 48 pounds of elemental sulfur to cover sulfur deficiency.

Pest Management. For pesticide information, pest identification, monitoring, and management visit the UC IPM website at 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 plus 2,4-D (Weedone LV4) in March and April are applied to approximately 1% of the acres with a small sprayer on the ATV.

Mow/Harrow. During June through September, the field is harrowed twice to break up the manure deposited in the pasture. A flail mower is used to clip the pasture two times during the same period.

ATV. An All Terrain Vehicle (ATV – 4 wheeler) is used for spot spraying, irrigating, checking fence lines and cattle. Use for spot spraying is allocated to that operation and checking cattle is allocated to grazing. The line item ATV is for irrigating and general use.

Harvest. Twenty acres are custom harvested in June. 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. 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. The chambered bales are for winter-feeding or off-farm sales. The regrowth is grazed from July through October. The other 20 acres are grazed from April through October. Grazing costs are the ATV use for daily checking of the fence and cattle at one-hour per day or 0.025 hours per acre for 40 acres.

Table A. Forage Produced Per Acre for Grazed Only Acres, Grazed and Hayed Only Acres and Average Yield Over Entire 40 Acres

			Graze Only (20 acres) Yield/acre	Graze & Hay Only (20 acres) Yield/acre		Average Yield over 40 acres Yield/acre	
Month	lbs/Acre	tons/acre	AUM	AUM	hay tons	AUM	hay tons
May*	3,247	1.62	3.25	0	0	1.62	0
June	1,783	0.89	1.78	0	2.51	0.89	1.25
July	1,628	0.81	1.63	1.63	0	1.63	0
August	1,665	0.83	1.67	1.67	0	1.67	0
Sept.	1,422	0.71	1.42	1.42	0	1.42	0
Oct.	753	0.38	0.75	0.75	0	0.75	0
Total	10,498	5.25	10.50	5.47	2.51	7.98	1.25

*Includes forage produced in the months preceding

Yield. The June hay harvest at 90% dry matter is assumed to yield 2.50 tons of hay per acre per year over 20 acres. Stocking rate of beef cattle varies with production. Total grazing yield on the hayed acreage is 5.50 AUM/acre (July to October) and the grazed only is 10.50 AUM/acre (April to October). AUM's (animal unit month) can be converted to approximate hay tons equivalent. For air-dried irrigated pasture hay, 1,000 pounds of hay is equivalent to 1.0 AUM or 2.0 AUM is equivalent to one ton of pasture hay. Projected forage yields based on unpublished data from five locations in the Sacramento Valley, grazed only yields for 20 acres, grazed and hayed yields on 20 acres and average yields over 40 acres are shown in Table A.

Returns. The price of $70 per ton is based on an average of the 2002 Sacramento Valley USDA market prices for alfalfa hay, fair grade. Returns will vary during the season, depending upon the hay quality and grazing markets. Returns for grazing forage are assumed to be the stated hay value and give a return of $35 per AUM (each animal unit = 0.5 ton). Irrigated pasture AUM values in the Sacramento Valley may vary from $15

to $40 depending upon a myriad of variables that include livestock grazed, input costs and pasture availability. Table 7 shows a range of returns and yields. Harvest costs in the table are based on a combination of grazing and hay harvest costs. The breakdown is shown in Table 7, "Costs Per Acre At Varying Yields to Produce Pasture."

Labor. Hourly wages for workers are $6.75 per hour for labor and $10.00 per hour for machine labor. Adding 34% for the employers share of federal and state payroll taxes, insurance, and other possible benefits gives the labor rates shown of $8.38 for non-machine labor and $13.40 per hour for machine labor. The labor hours for operations involving machinery are 10% higher than the machine hours to account for extra labor involved in equipment set-up, moving, maintenance and repair.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by 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 $1.26 and $1.51 per gallon, respectively. The fuel, lube, and repair cost per acre for each operation in Table 3 is determined by multiplying the total hourly operating cost in Table 7 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 7.40% 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 to 8. One-half of the annual overhead costs for the 40 acres in the establishment year (Table 1) 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 0.660% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $504 for the entire farm (50 acres) or $10.08 per acre.

Office. Costs are estimated to include minor bookkeeping, tax preparation, and phone.

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

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments.

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 ((Purchase Price – Salvage Value) x Capital Recovery Factor) + (Salvage Value x Interest Rate).

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.

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 6.41% used to calculate capital recovery cost is the USDA-ERS's ten year average of California's agricultural sector long-run rate of return to production assets from current income. This represents the long-term interest rate typical of another agricultural enterprise.

Tools. Includes shop equipment/tools, hand and cattle tools used on the farm.

Fence. This is as dealer-estimated cost for energizer (electrical unit), barbed wire, posts and installation for perimeter fence on the 40 acres.

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Irrigation System. The irrigation system was installed during the previous crop, but is being depreciated over the stand life of the two crops. The system consists of two underground lines with alfalfa valves, each line is one-quarter mile long and installed at the edge and middle of the 40 acres. The water is gravity fed from a water district canal into the growers' underground main line.

Land. Land suitable for pasture production can vary widely in value across the region. Prices range from $1,500 per acre to $5,000. The land in this study is owned by the grower and cost $2,000 per acre.

Livestock Facility. These facilities for handling the grazing cattle are estimated costs for two corrals/pens, a squeeze chute, guardrail and related equipment.

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 Table 1 represents the establishment cost per acre. For this study, the cost is $251 per acre or $10,040 for the 40 acres. 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 40% to indicate a mix of new and used equipment. 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.

REFERENCES

American Society of Agricultural Engineers. 1994. *American Society of Agricultural Engineers Standards Yearbook*. Russell H. Hahn and Evelyn E. Rosentreter (ed.) St. Joseph, Missouri. 41st edition.

American Society of Farm Managers and Rural Appraisers. 2001. *Trends in Agricultural Land & Lease Values*. California Chapter of the American Society of Farms Managers and Rural Appraisers. Woodbridge, CA.

Boelje, Michael D., and Vernon R. Eidman. 1984. *Farm Management*. John Wiley and Sons. New York, New York

Doane Editors. 1984. *Facts and Figures for Farmers*. Doane Publishing. St. Louis, MO. pp 126.

Integrated Pest Management Education and Publications. 1999. "UC Pest Management Guidelines, Alfalfa". In M. L. Flint (ed.) *UC IPM Pest Management Guidelines.* University of California. Division of Agriculture and Natural Resources. Oakland, CA. Publication 3339.

Lile, David F., Daniel B. Marcum, Donald L. Lancaster, Karen, M. Klonsky, and Richard L. De Moura. 2002. *Sample Costs To Establish and Produce Pasture, Intermountain Region.* University of California Cooperative Extension and Department of Agricultural and Resource Economics. Davis, CA.
Davis, CA.

Harper, John M., Karen M. Klonsky, Richard L. De Moura. 2002. *Sample to Establish and Produce Pasture, North Coast*. University of California Cooperative Extension and Department of Agricultural and Resource Economics. Davis, CA.

Long, Rachel, Barbara Reed, Karen Klonsky, Kent Brittan, and Pete Livingston. 1998. *Sample Costs to Establish an Alfalfa Stand and Produce Alfalfa Hay, Sacramento Valley*. University of California Cooperative Extension and Department of Agricultural and Resource Economics. Davis, CA.

University of California. Division of Agriculture and Natural Resources. 1995. *Intermountain Alfalfa Management.* Steve B. Orloff and Harry L. Carlson, (ed.) University of California. Division of Agriculture and Natural Resources. Oakland, California. Publication 3366.

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Table 1. COSTS PER ACRE to ESTABLISH PASTURE

SACRAMENTO VALLEY - 2002

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per acre: Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Rip 2X	0.00	0	0	0	50	50	
Disc 2X	0.00	0	0	0	36	36	
Fertilize	0.00	0	0	22	5	27	
Borders	0.00	0	0	0	18	18	
Level - Float	0.00	0	0	0	10	10	
Plant - Irrigated Pasture Seed	0.00	0	0	26	12	38	
Irrigate	1.25	10	0	12	0	22	
ATV	1.25	20	2	0	0	22	
TOTAL CULTURAL COSTS	2.50	30	2	60	131	223	
Interest on operating capital @ 7.40%						4	
TOTAL OPERATING COSTS/ACRE		31	1	60	131	226	
CASH OVERHEAD:							
Liability Insurance						4	
Office Expense						13	
Property Taxes						1	
Property Insurance						3	
Investment Repairs						6	
TOTAL CASH OVERHEAD COSTS						25	
TOTAL CASH COSTS/ACRE						251	
NON-CASH OVERHEAD*:		Per producing acre		-- Annual Cost -- Capital Recovery			
Land		833		53		53	
Irrigation System		275		19		19	
Tools		13		1		1	
Equipment		50		10		10	
TOTAL NON-CASH OVERHEAD COSTS		1,171		84		84	
TOTAL COSTS/ACRE						325	

*50% of costs allocated to previous crop

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Table 2 MATERIAL and INPUT COSTS to ESTABLISH PASTURE

SACRAMENTO VALLEY - 2002

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
OPERATING COSTS					
Custom:					
Rip	2.00	acre	25.00	50	
Disc	2.00	acre	18.00	36	
Fertilizer Spread	1.00	acre	5.00	5	
Make Borders	1.00	acre	10.00	10	
Border Hand Labor portion	1.00	acre	8.00	8	
Level (Float)	1.00	acre	10.00	10	
Plant w/Brillion Seeder	1.00	acre	12.00	12	
Fertilizer:					
16-20-00	200.00	lb	0.11	22	
Seed:					
Irrigated Pasture Mix	18.00	lb	1.45	26	
Water:					
Water-Surface	9.00	acin	1.31	12	
Labor (machine)	1.50	hrs	13.40	20	
Labor (non-machine)	1.25	hrs	8.38	10	
Fuel - Gas	0.75	gal	1.51	1	
Lube				0	
Machinery repair				0	
Interest on operating capital @ 7.41%				4	
TOTAL OPERATING COSTS/ACRE				226	

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Table 3. COSTS PER ACRE to PRODUCE PASTURE

SACRAMENTO VALLEY 2002

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per acre: Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Irrigate	0.60	5	0	71	0	76	
Fertilize	0.00	0	0	14	5	19	
Mow Pasture 2X	0.37	6	2	0	0	8	
Harrow Pasture 2X	0.10	2	0	0	0	2	
Weed:Spot Sprays	0.06	1	0	13	0	14	
ATV	1.25	20	1	0	0	22	
TOTAL CULTURAL COSTS	2.38	34	3	98	5	141	
Harvest:							
Graze Pasture (20 acres)	1.13	18	1	0	0	19	
Bale Pasture (20 acres)	0.00	0	0	0	48	48	
Graze Pasture (40 acres)	3.00	48	1	0	0	50	
TOTAL HARVEST COSTS	4.13	66	2	0	48	116	
Interest on operating capital @ 7.40%						7	
TOTAL OPERATING COSTS/ACRE		100	5	99	53	264	
CASH OVERHEAD:							
Liability Insurance						10	
Office Expense						38	
Property Taxes						3	
Property Insurance						6	
Investment Repairs						23	
TOTAL CASH OVERHEAD COSTS						80	
TOTAL CASH COSTS/ACRE						344	
NON-CASH OVERHEAD:		Per producing acre		-- Annual Cost -- Capital Recovery			
Land		2,500		160		160	
Irrigation System		825		58		58	
Tools		38		3		3	
Pasture Establishment		251		23		23	
Electric Fence Perimeter		165		15		15	
Livestock Corrals		138		11		11	
Equipment		380		39		39	
TOTAL NON-CASH OVERHEAD COSTS		4,297		309		309	
TOTAL COSTS/ACRE						654	

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Table 4. COSTS AND RETURNS PER ACRE to PRODUCE PASTURE

SACRAMENTO VALLEY - 2002

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Pasture Hay	1.25	ton	70.00	88	
Graze AUM (AUM=0.5 ton of hay)	8.00	AUM	35.00	280	
TOTAL GROSS RETURNS				367	
OPERATING COSTS					
Water:					
Water-Surface	54.00	acin	1.31	71	
Fertilizer:					
21-0-0-24S Ammonium Sulfate	42.00	lbN	0.35	14	
Custom:					
Fertilizer Spread	1.00	acre	5.00	5	
Swath Bale Stack Hay	1.25	Ton	38.00	48	
Herbicide:					
Roundup Ultra Max	1.00	pint	7.36	7	
Weedone LV4	2.40	pint	2.53	6	
Labor (machine)	7.09	hrs	13.40	95	
Labor (non-machine)	0.60	hrs	8.38	5	
Fuel - Gas	1.08	gal	1.51	2	
Fuel - Diesel	1.14	gal	1.26	1	
Lube				0	
Machinery repair				2	
Interest on operating capital @ 7.41%				7	
TOTAL OPERATING COSTS/ACRE				264	
NET RETURNS ABOVE OPERATING COSTS				104	
CASH OVERHEAD COSTS:					
Liability Insurance				10	
Office Expense				38	
Property Taxes				3	
Property Insurance				6	
Investment Repairs				23	
TOTAL CASH OVERHEAD COSTS/ACRE				80	
TOTAL CASH COSTS/ACRE				344	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Land				160	
Irrigation System				58	
Tools				3	
Pasture Establishment				23	
Electric Fence Perimeter				15	
Livestock Corrals				11	
Equipment				39	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				309	
TOTAL COSTS/ACRE				654	
NET RETURNS ABOVE TOTAL COSTS				-286	

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Table 5. MONTHLY CASH COSTS PER ACRE to PRODUCE PASTURE

SACRAMENTO VALLEY 2002

Beginning JAN 02 Ending DEC 02	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	NOV 02	DEC 02	TOTAL
Cultural:													
Irrigate				6	13	17	14	14	6	5			76
Fertilize			19										19
Mow Pasture 2X							4		4				8
Harrow Pasture 2X						1		1					2
Weed:Spot Sprays			7	7									14
ATV	2	2	2	2	2	2	2	2	2	2			21
TOTAL CULTURAL COSTS	2	2	28	15	15	20	20	17	12	7	0	0	141
Harvest:													
Graze Pasture (20 acres)				6	6	6							19
Graze Pasture (40 acres)							12	12	12	12			50
Bale Pasture (20 acres)						48							48
TOTAL HARVEST COSTS				6	6	54	12	12	12	12			116
Interest on operating capital	0	0	0	0	0	1	1	1	1	2	0	0	7
TOTAL OPERATING COSTS/ACRE	2	2	29	22	22	74	34	31	26	21			264
OVERHEAD:													
Liability Insurance										10			10
Office Expense										38			38
Property Taxes				3									3
Property Insurance		3		3									6
Investment Repairs	2	2	2	2	2	2	2	2	2	2	2	2	23
TOTAL CASH OVERHEAD COSTS	2	5	2	8	2	2	2	2	2	50	2	2	80
TOTAL CASH COSTS/ACRE	4	7	31	30	24	76	36	33	28	71	2	2	344

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Table 6. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT,

and BUSINESS OVERHEAD COSTS

SACRAMENTO VALLEY - 2002

ANNUAL EQUIPMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
02	45HP 2WD Tractor	20,120	20	2,582	1,746	75	11	1,832
02	ATV 4WD	5,000	5	1,000	1,024	20	3	1,047
02	Harrow 20'	3,250	20	169	288	11	2	301
02	Mower Flail 8'	9,600	20	500	852	33	5	890
	TOTAL	37,970		4,251	3,910	139	21	4,070
	40% of New Cost *	15,188		1,700	1,564	56	8	1,628

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

					Cash Overhead			
Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Repairs	Total
Electric Perimeter Fence	6,600	20		595	22	3	132	752
Irrigation System	33,000	40		2,308	109	16	660	3,093
Land	100,000	20	100,000	6,410	0	100	0	6,510
Livestock Corrals	5,500	20	1,500	457	23	4	110	593
Pasture Establishment	10,040	20		905	33	0	0	938
Tools	1,500	20		135	5	1	30	171
TOTAL INVESTMENT	156,640		101,500	10,810	192	124	932	12,057

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	50	acre	10.08	504
Office	40	acre	37.50	1,500

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Table 7. HOURLY EQUIPMENT COSTS

SACRAMENTO VALLEY -2002

			COSTS PER HOUR						
		Actual		Cash Overhead		Operating			
Yr	Description	Hours Used	Capital Recovery	Insur-ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
02	45HP 2WD Tractor	20.70	33.46	1.44	0.22	0.54	3.20	3.74	39.05
02	ATV 4WD	217.40	1.88	0.04	0.01	0.13	0.35	0.48	2.40
02	Harrow 20'	4.10	27.87	1.09	0.17	0.42	0.00	0.42	29.54
02	Mower Flail 8'	14.70	23.15	0.91	0.14	2.02	0.00	2.02	26.22

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Table 8. RANGING ANALYSIS
SACRAMENTO VALLEY 2002

COSTS PER ACRE AT VARYING YIELD TO PRODUCE PASTURE

Hay Yield (ton/acre):	0.50	0.75	1.00	1.25	1.50	1.75	2.00
Graze Yield (AUM):	3.50	5.00	6.50	8.00	9.50	11.00	12.50
Total Yield (ton/acre)*:	2.25	3.25	4.25	5.25	6.25	7.25	8.25
OPERATING COSTS/ACRE:							
Cultural Cost	141	141	141	141	141	141	141
Harvest Cost (Hay & Graze)	87	97	106	116	125	135	144
Interest on operating capital	7	7	7	7	8	8	8
TOTAL OPERATING COSTS/ACRE	235	245	254	264	274	284	293
TOTAL OPERATING COSTS/ton	104	75	60	50	44	39	36
CASH OVERHEAD COSTS/ACRE	80	80	80	80	80	80	80
TOTAL CASH COSTS/ACRE	315	325	334	344	354	364	373
TOTAL CASH COSTS/ton	140	100	79	66	57	50	45
NON-CASH OVERHEAD COSTS/ACRE	309	309	309	309	309	309	309
TOTAL COSTS/ACRE	624	634	643	653	663	673	682
TOTAL COSTS/ton	277	195	151	124	106	93	83

*Includes AUM equivalent of AUM=0.5 tons/acre

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE	TOTAL YIELD (ton/acre)						
$/ton	2.25	3.25	4.25	**5.25**	6.25	7.25	8.25
70.00	-78	-18	44	**104**	164	224	285
80.00	-55	15	86	156	226	296	367
90.00	-33	48	129	209	289	369	450
100.00	-10	80	171	261	351	441	532
110.00	13	113	214	314	414	514	615
120.00	35	145	256	366	476	586	697
130.00	58	178	299	419	539	659	780

NET RETURNS PER ACRE ABOVE CASH COST

PRICE	TOTAL YIELD (ton/acre)						
$/ton	2.25	3.25	4.25	**5.25**	6.25	7.25	8.25
70.00	-158	-98	-37	**24**	84	144	205
80.00	-135	-65	6	76	146	216	287
90.00	-113	-33	49	129	209	289	370
100.00	-90	0	91	181	271	361	452
110.00	-68	33	134	234	334	434	535
120.00	-45	65	176	286	396	506	617
130.00	-23	98	219	339	459	579	700

NET RETURNS PER ACRE ABOVE TOTAL COST

PRICE	TOTAL YIELD (ton/acre)						
$/ton	2.25	3.25	4.25	**5.25**	6.25	7.25	8.25
70.00	-467	-407	-346	**-286**	-226	-166	-105
80.00	-444	-374	-303	-233	-163	-93	-22
90.00	-422	-342	-261	-181	-101	-21	61
100.00	-399	-309	-218	-128	-38	52	143
110.00	-377	-277	-176	-76	25	125	226
120.00	-354	-244	-133	-23	87	197	308
130.00	-332	-212	-91	30	150	270	391

Bold=Yield and Returns used in study