
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2015

**SAMPLE COSTS
TO ESTABLISH OR REESTABLISH AND
PRODUCE
PASTURE**



SACRAMENTO VALLEY

Flood Irrigation

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In the Sacramento Valley -2015**

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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 through 6 are provided for entering your farm costs. An additional cost of production study for irrigated pasture in this region is also available: (*“Sample Costs to Produce Pasture in the Sacramento Valley, Flood Irrigation - 2015”*).

The hypothetical farm operation, production practices, overhead, and calculations are described under assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, 530-752-4651, destewart@ucdavis.edu.

Sample Cost of Production studies for many commodities are available and can be down loaded from the Department website, <http://coststudies.ucdavis.edu>. Many older archived studies are also available on the website.

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ASSUMPTIONS

The assumptions refer to Tables 1 to 10 and pertain to sample costs to establish an irrigated 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 that is leased consists of 45 contiguous acres. Forty of the acres are considered pasture land. The remaining 5 acres are roads, farmstead, and miscellaneous buildings and corrals. Irrigated pasture land is valued at \$2,000 per acre. For this study the land is rented at \$180 per acre per year. In the establishment years of the Tilled and No Till scenarios the pasture is rented for 4 months, from September through December.

This cost study analyzes the expenses of two separate scenarios of establishing a pasture. In the first scenario a pasture is established by tilling and all necessary ground preparation work. This includes ripping, disking, ground leveling and pulling checks. The second scenario has a non-selective herbicide applied and a no till drill is used to replant the pasture. There is no ground preparation for the no till scenario. A custom operator does all of the land preparation through planting for both scenarios. It is assumed that the irrigation infrastructure is already intact.

The farm also includes cattle that are fed pasture hay and/or grazed on the pasture. The owner manages the farm and cattle. This study includes the costs from land preparation and planting, through the following year's harvest approximately 12 months after planting. After the first year of establishment, refer to the "*Sample Costs to Produce Pasture Cost Study-2015*" for maintenance and production data.

Establishment Options **Producer Established New Pasture (Tilled)** Tables 1-2 & 10

Land Preparation. The ground is ripped with a chisel plow 20 to 32 inches deep to fracture the soil to improve water infiltration and root growth for seedling plants. 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.

Leveling. A laser level is used to level the field for water to flow down each check during irrigation and off the field during winter storms. After leveling, borders (levees) for irrigation checks are made at intervals, which vary from 40-80 feet apart depending on soil type and slope. Cost to laser level will vary depending on the amount of leveling required.

Fertilization. Prior to planting, 200 pounds of 16-20-0-24% sulfur is spread and incorporated by disking. A custom operator does the application during the final stages of ground preparation. Growers should apply fertilizer or soil amendments after appropriate soil and/or tissue testing in the establishment and succeeding years. Phosphorous does not move in the soil profile, therefore pre-plant application serves as a long term investment within the root zone. The addition of sulfur will last one to three years depending on soil type.

Weed Control. Annual grasses and broadleaf weeds can compete with the seedlings during stand establishment. After the pre-plant irrigation, germinated weeds are killed with a non-selective herbicide glyphosate (Roundup UltraMax).

Planting. In September, an irrigated pasture mix at 15 to 20 pounds per acre is planted with a tractor-pulled Brillion, small seed planter. Stand life in this study is 20 years.

Irrigation. Irrigations are done preplant (September), immediately after planting (early October), and 10 to 14 days later (late October) to germinate the seed. A total of 0.75 acre-feet (nine acre-inches) are applied during the establishment year. This cost study assumes delivered district water. If your pasture depends on pumped irrigation water for either flood or sprinklers, these costs will increase.

Harvest. October plantings will not produce a crop the first year until late spring.

Producer Established Pasture Using (No-Till) Drill Tables 3-4 & 10

Remove litter. In September the pasture is grazed heavily to remove litter.

Chemical Removal of Old Pasture. After being heavily grazed in early fall, all vegetation is killed with a non-selective herbicide glyphosate. The pasture is then irrigated, allowed to germinate, and again sprayed with a non-selective herbicide.

Planting. Once the second herbicide application has taken effect (up to 1 week) an irrigated pasture mix is planted with a tractor-pulled no till drill at 15 to 20 pounds per acre in early October. Stand life in this study is 20 years.

Fertilization. At planting 16-20-0-24% sulfur is added to the fertilizer box of the no till drill and applied at 200 lbs. per acre.

Irrigation. Irrigations are done once prior to planting and then after planting until fall rains begin. A total of 0.75 acre-feet (nine acre-inches) are applied during the establishment year. This cost study assumes delivered district water. If your pasture depends on pumped irrigation water for either flood or sprinklers, these costs will increase.

Harvest. October plantings will not produce a crop in the first year until late spring.

Production Operating Costs Year-2 Tables 5-10.

The second year costs uses the tilling establishment costs of \$439/acre to determine the \$34 non cash overhead costs of establishment. If you use the no-till method costs of \$269/acre, your establishment costs would be significantly less.

Irrigation. The water is supplied by an irrigation district and is gravity fed into the grower's irrigation system. Water districts in the Sacramento Valley were randomly selected for water costs and an average

cost determined. Costs vary among districts and depending on the district, the rates are either metered (per acre foot) or non-metered rates (per acre). Four and one-half acre-feet (54 inches) of water, converted to per-acre costs ranged from \$42 to \$101 or \$10 to \$25 per acre-foot, including base charges and application fees. Irrigation begins in April and continues into October. Four and one-half acre-feet of water at \$16.32 per acre-foot, (\$1.36 per acre inch) or \$73.44 per acre is applied by border-flood irrigation. Pumped irrigation water for either flood or sprinklers will increase the irrigation costs. Irrigation water costs are volatile and vary among districts and within counties.

Fertilization. 100 lbs per acre of urea (46-0-0) provides 46 pounds of actual nitrogen applied in June for the second hay cutting. Deficiencies of phosphorus and sulfur were corrected at planting with the use of 16-20-0-24% sulfur. The second year of production, (calendar year-3) ammonium sulfate would be applied based upon soil/tissue analysis results.

Pest Management. Pesticides mentioned in this study are not recommendations, but those commonly used in the region. For information and pesticide use permits, contact the local county Agricultural Commissioner's office. For information on other pesticides available, pest identification, monitoring, and management, visit the UC IPM website at www.ipm.ucdavis.edu. **Pest control costs can vary considerably each year depending upon local conditions and pest populations in any given year.** Adjuvants are recommended for many pesticides for effective control and are an added cost. Adjuvants are not included as a cost in this study.

Pest Control Adviser/Certified Crop Advisor (PCA/CCA). Written recommendations are required for many pesticides and are available from licensed pest control or certified crop advisers. In addition the PCA/CCA or an independent consultant will monitor the field for agronomic problems including irrigation and nutrition. Growers may hire a private PCA/CCA or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. It is assumed in this study that PCA/CCA services are provided by the chemical and Fertilizer Company.

Weeds. Spot sprays with a nonselective herbicide, glyphosate for grasses and 2,4-D for broadleaves in March and April are applied to approximately 1% of the acres with a small sprayer on the ATV.

Harvest. Newly Established Pasture - Forty acres are custom harvested in June, with a second cutting in September. 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 bale wagon picks up the bales and moves them from the field to stacks. The bales are for winter-feeding or off-farm sales.

Yield. The June hay harvest at 90% dry matter is assumed to yield 2.0 tons per acre in the first cutting and 1.5 tons per acre from the second cutting in late August or early September. Haying management, species composition, access to timely irrigation water and the fertilizer program will affect the pasture production (yield). Custom harvest is charges at \$48/ton at a combined total of 3.5 tons equally \$168 per acre.

Returns. The price of \$185 per ton is based on an average of the 2014 Sacramento Valley USDA market prices for hay. Returns will vary during the season, depending upon the hay quality and grazing markets. Table 8 "Ranging Analysis" shows a range of returns and yields. Harvest costs in the table are based on hay harvest costs.

Labor. On a 40 acre operation, the labor is provided by the owner/operator and will not be a cash cost in this study.

Cash Overhead

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 interest, office expense, liability 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.

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 5.75% 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. The rate will vary depending upon various factors, but the rate in this study is considered a typical lending rate by a farm lending agency as of January 2015.

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 \$627 for the entire farm (45 acres) or \$13.93 per acre.

Crop Insurance. The insurance protects the grower from crop losses due to adverse weather conditions, fire, unusual diseases and/or insects, wildlife, earthquake, volcanic eruption, and failure of the irrigation system. The grower can choose the protection level at 50% to 75% of production history or county yields. In this study, no level is specified.

Office Expense. 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;

$$((\text{Purchase Price} - \text{Salvage Value}) \times \text{Capital Recovery Factor}) + (\text{Salvage Value} \times \text{Interest Rate}).$$

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 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 6.25% 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.

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 herbicide treatment of the old pasture followed by tilling and releveling. For this method of reestablishment, the cost is \$439 per acre or \$17,560 for the 40 acres. The Total Cash Cost in the first year shown in Table 3 represents the establishment cost for herbicide treatment and no till drill planting is significantly less at \$269 per acre or \$10,760 for the 40 acres. The pasture stand establishment cost is amortized over the 20-year stand life.

Irrigation System. 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.

Livestock Facility. These facilities for handling the grazing cattle are estimated costs for corrals, a squeeze chute and related equipment that are included in the lease price.

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 power takeoff (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are \$3.88 and \$3.39 per gallon, respectively. The costs are based on October 2014 prices. Energy Information Administration, Department of Energy (DOE) weekly data. 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 costs per acre for each operation in Tables 1 and 4 are determined by multiplying the total hourly operating cost in Table 9 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.

ATV. An All-Terrain Vehicle (ATV – 4 wheeler) is used for spot spraying, irrigating and checking fence lines. The charges for the ATV and other equipment are included in the individual custom operations.

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

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

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UC COOPERATIVE EXTENSION
TABLE 1. COSTS PER ACRE TO ESTABLISH PASTURE
TILL
SACRAMENTO VALLEY-2015

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent		
Pre-Plant:								
Sub-Soil 24" 2X	0.00	0	0	0	0	50	50	
Fertilizer 16-20-0-24% S	0.00	0	0	0	68	0	68	
Disc 2X	0.00	0	0	0	0	48	48	
Laser Level	0.00	0	0	0	0	75	75	
Ridge Borders	0.00	0	0	0	0	15	15	
Irrigate-Flood 3X	0.00	0	0	0	4	0	4	
Weed Control-Spray Herbicides	0.00	0	0	0	9	11	19	
TOTAL PRE-PLANT COSTS	0.00	0	0	0	81	199	279	
Cultural:								
Plant Pasture Mix-Fertilizer	0.00	0	0	0	41	15	56	
Irrigate-Flood 3X	0.00	0	0	0	8	0	8	
TOTAL CULTURAL COSTS	0.00	0	0	0	49	15	64	
Interest on Operating Capital at 5.75%							0	
TOTAL OPERATING COSTS/ACRE	0	0	0	0	137	214	343	
CASH OVERHEAD:								
Office Expense							20	
Liability Insurance 45Ac							16	
Land Lease-4 Months 40 Ac							60	
Property Taxes							0	
Property Insurance							0	
Investment Repairs							0	
TOTAL CASH OVERHEAD COSTS/ACRE							96	
TOTAL CASH COSTS/ACRE							439	
NON-CASH OVERHEAD:								
		Per Producing Acre		Annual Cost Capital Recovery				
Equipment		0		0			0	
TOTAL NON-CASH OVERHEAD COSTS		0		0			0	
TOTAL COSTS/ACRE							439	

UC COOPERATIVE EXTENSION
TABLE 2. MATERIAL INPUT COSTS PER ACRE TO ESTABLISH PASTURE
TILL
SACRAMENTO VALLEY-2015

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
OPERATING COSTS					
Fertilizer:					68
Ammonium Sulfate 24% S	200.00	Lb	0.34		68
Custom:					214
Chisel 18-24" 1X	2.00	Acre	25.00		50
Disc & Roll 1X	2.00	Acre	24.00		48
Laser Level	1.00	Acre	75.00		75
Ridge-Boarders	1.00	Acre	15.00		15
Ground Application	1.00	Acre	10.50		11
Plant Pasture Mix	1.00	Acre	15.00		15
Seed:					41
Pasture Mix	18.00	Lb	2.28		41
Herbicide:					9
Roundup UltraMax	2.00	Pint	4.31		9
Irrigation:					12
Water Delivered	9.00	AcIn	1.36		12
Labor					0
Machinery					0
Fuel-Gas	0.00	Gal	3.39		0
Fuel-Diesel	0.00	Gal	3.88		0
Lube					0
Machinery Repair					0
Interest on Operating Capital @ 5.75%					0
TOTAL OPERATING COSTS/ACRE				<u>343</u>	
TOTAL OPERATING COSTS/TON					<u>86</u>

UC COOPERATIVE EXTENSION
TABLE 3. COSTS PER ACRE TO ESTABLISH PASTURE
NO-TILL
SACRAMENTO VALLEY-2015

Operation	Cash and Labor Costs per Acre							Total Cost	Your Cost
	Operation Time (Hrs/A)	Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/Rent			
Pre-Plant:									
Weeds-Spray Out 2X	0.00	0	0	0	17	21	38		
Irrigate-Flood 2X	0.00	0	0	0	7	0	7		
TOTAL PRE-PLANT COSTS	0.00	0	0	0	24	21	45		
Cultural:									
Plant Pasture Mix-Fertilize	0.00	0	0	0	109	15	124		
Irrigate-Flood 2X	0.00	0	0	0	5	0	5		
TOTAL CULTURAL COSTS	0.00	0	0	0	114	15	129		
Interest on Operating Capital at 5.75%									-2
TOTAL OPERATING COSTS/ACRE	0	0	0	0	146	36	173		
CASH OVERHEAD:									
Office Expense									20
Liability Insurance 45 Ac									16
Land Lease-4 Months 40 Ac									60
Property Taxes									0
Property Insurance									0
TOTAL CASH OVERHEAD COSTS/ACRE									96
TOTAL CASH COSTS/ACRE									269
NON-CASH OVERHEAD:									
		Per Producing Acre		Annual Cost					Capital Recovery
TOTAL NON-CASH OVERHEAD COSTS		0		0					0
TOTAL COSTS/ACRE									269

UC COOPERATIVE EXTENSION
TABLE 4. MATERIAL INPUT COSTS PER ACRE TO ESTABLISH PASTURE
NO-TILL
 SACRAMENTO VALLEY-2015

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
OPERATING COSTS					
Fertilizer:					68
Ammonium Sulfate 24% S	200.00	Lb	0.34		68
Custom:					36
Ground Application	2.00	Acre	10.50		21
Plant Pasture Mix	1.00	Acre	15.00		15
Seed:					41
Pasture Mix	18.00	Lb	2.28		41
Herbicide:					17
Roundup UltraMax	4.00	Pint	4.31		17
Irrigation:					12
Water Delivered	9.00	Acln	1.36		12
Interest on Operating Capital @ 5.75%					0
TOTAL OPERATING COSTS/ACRE				173	
TOTAL OPERATING COSTS/TON				43	

UC COOPERATIVE EXTENSION
TABLE 5. COSTS PER ACRE FOR FIRST YEAR PRODUCTION-PASTURE
Second Year-TILL
 SACRAMENTO VALLEY-2015

Operation	Cash and Labor Costs per Acre							Total Cost	Your Cost
	Operation Time (Hrs/A)	Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent			
Cultural:									
Weeds-Spot Spray 2X	0.00	0	0	0	3	2	5		
Irrigate-Flood 7X	0.00	0	0	0	73	0	73		
Fertilizer 46-0-0	0.00	0	0	0	70	11	81		
TOTAL CULTURAL COSTS	0.00	0	0	0	147	13	159		
Harvest: Swath/Rake/Bale/Roadside									
	0.00	0	0	0	0	168	168		
TOTAL HARVEST COSTS	0.00	0	0	0	0	168	168		
Interest on Operating Capital at 5.75%							5		
TOTAL OPERATING COSTS/ACRE	0	0	0	0	147	183	332		
CASH OVERHEAD:									
Office Expense							20		
Liability Insurance 45Ac							16		
Land Lease 40 Ac							180		
Property Taxes							2		
Property Insurance							0		
Investment Repairs							0		
TOTAL CASH OVERHEAD COSTS/ACRE							218		
TOTAL CASH COSTS/ACRE							550		
NON-CASH OVERHEAD:									
		Per Producing Acre		Annual Cost Capital Recovery					
Establish Pasture-Tilled 40Ac		439		34			34		
Equipment		0		0			0		
TOTAL NON-CASH OVERHEAD COSTS		439		34			34		
TOTAL COSTS/ACRE							585		

UC COOPERATIVE EXTENSION
TABLE 6. COSTS AND RETURNS PER ACRE FOR FIRST YEAR-PASTURE
Second Year-TILL
 SACRAMENTO VALLEY-2015

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Hay	3.5	Ton	185.00	648	
TOTAL GROSS RETURNS	3.5	Ton		648	
OPERATING COSTS					
Fertilizer:					70
46-0-0	200.00	Lb	0.35	70	
Custom:					183
Ground Application	0.20	Acre	10.50	2	
Broadcast Fertilizer	1.00	Acre	10.50	11	
Swath/Rake/Bale/Roadside	3.50	Ton	48.00	168	
Herbicide:					3
Roundup UltraMax	0.40	Pint	4.31	2	
2,4-D	0.40	Pint	3.55	1	
Irrigation:					73
Water Delivered	54.00	AcIn	1.36	73	
Interest on Operating Capital @ 5.75%					5
TOTAL OPERATING COSTS/ACRE				335	
TOTAL OPERATING COSTS/TON				96	
NET RETURNS ABOVE OPERATING COSTS				313	
CASH OVERHEAD COSTS					
Office Expense				20	
Liability Insurance 45Ac				16	
Land Lease 40 Ac				180	
Property Taxes				2	
Property Insurance				0	
Investment Repairs				0	
TOTAL CASH OVERHEAD COSTS/ACRE				218	
TOTAL CASH OVERHEAD COSTS/TON				62	
TOTAL CASH COSTS/ACRE				553	
TOTAL CASH COSTS/TON				158	
NET RETURNS ABOVE CASH COSTS				95	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Establish Pasture-Tilled 40Ac				34	
Equipment				0	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				34	
TOTAL NON-CASH OVERHEAD COSTS/TON				10	
TOTAL COST/ACRE				587	
TOTAL COST/TON				168	
NET RETURNS ABOVE TOTAL COST				60	

UC COOPERATIVE EXTENSION
TABLE 7. MONTHLY CASH COSTS PER ACRE TO PRODUCE PASTURE
Second Year-TILL
SACRAMENTO VALLEY-2015

	MAR 15	APR 15	MAY 15	JUN 15	JUL 15	AUG 15	SEP 15	OCT 15	Total
Cultural:									
Weeds-Spot Spray 2X	3	3							5
Irrigate-Flood 7X		12	10	12	12	12	10	8	76
Fertilizer 46-0-0				81					81
TOTAL CULTURAL COSTS	3	15	10	93	12	12	10	8	162
Harvest: Swath/Rake/Bale/Roadside				96			72		168
TOTAL HARVEST COSTS	0	0	0	96	0	0	72	0	168
Interest on Operating Capital @ 5.75%	0	0	0	1	1	1	2	0	5
TOTAL OPERATING COSTS/ACRE	3	15	10	190	13	13	83	8	335
CASH OVERHEAD									
Office Expense							20		20
Liability Insurance 45Ac							16		16
Land Lease 40 Ac							180		180
Property Taxes					1				2
Property Insurance					0				0
Investment Repairs	0	0	0	0	0	0	0	0	0
TOTAL CASH OVERHEAD COSTS	0	0	0	0	1	0	216	0	218
TOTAL CASH COSTS/ACRE	3	15	10	190	15	13	299	8	553

UC COOPERATIVE EXTENSION
TABLE 8. RANGING ANALYSIS – PASTURE
Second Year-TILL

SACRAMENTO VALLEY 2015

COSTS PER ACRE AND PER TON AT VARYING YIELDS TO PRODUCE PASTURE PRODUCTION

	YIELD (TON)						
	2.00	2.50	3.00	3.50	4.00	4.50	5.00
OPERATING COSTS/ACRE:							
Cultural	162	162	162	162	162	162	162
Harvest	96	120	144	168	192	216	240
Interest on Operating Capital @ 5.75%	4	4	5	5	5	6	6
TOTAL OPERATING COSTS/ACRE	262	286	311	335	359	384	408
TOTAL OPERATING COSTS/TON	130.99	114.51	103.53	95.69	89.81	85.23	81.57
CASH OVERHEAD COSTS/ACRE	218	218	218	218	218	218	218
TOTAL CASH COSTS/ACRE	480	504	529	553	577	602	626
TOTAL CASH COSTS/TON	240.01	201.73	176.21	157.99	144.32	133.68	125.18
NON-CASH OVERHEAD COSTS/ACRE	34	34	34	34	34	34	34
TOTAL COSTS/ACRE	515	539	563	587	612	636	660
TOTAL COSTS/TON	257.00	216.00	188.00	168.00	153.00	141.00	132.00

Net Return per Acre above Operating Costs for Pasture Production

PRICE (\$/ton)	YIELD (Ton/acre)						
Hay	2.00	2.50	3.00	3.50	4.00	4.50	5.00
155.00	48	101	154	208	261	314	367
165.00	68	126	184	243	301	359	417
175.00	88	151	214	278	341	404	467
185.00	108	176	244	313	381	449	517
195.00	128	201	274	348	421	494	567
205.00	148	226	304	383	461	539	617
215.00	168	251	334	418	501	584	667

Net Return per Acre above Cash Costs for Pasture Production

PRICE (\$/ton)	YIELD (Ton/acre)						
Hay	2.00	2.50	3.00	3.50	4.00	4.50	5.00
155.00	-170	-117	-64	-10	43	96	149
165.00	-150	-92	-34	25	83	141	199
175.00	-130	-67	-4	60	123	186	249
185.00	-110	-42	26	95	163	231	299
195.00	-90	-17	56	130	203	276	349
205.00	-70	8	86	165	243	321	399
215.00	-50	33	116	200	283	366	449

TABLE 8. RANGING ANALYSIS CONTINUED
SACRAMENTO VALLEY 2015

Net Return per Acre above Total Costs for Pasture Production

PRICE (\$/ton)	YIELD (Ton/acre)						
Hay	2.00	2.50	3.00	3.50	4.00	4.50	5.00
155.00	-205	-151	-98	-45	8	61	115
165.00	-185	-126	-68	-10	48	106	165
175.00	-165	-101	-38	25	88	151	215
185.00	-145	-76	-8	60	128	196	265
195.00	-125	-51	22	95	168	241	315
205.00	-105	-26	52	130	208	286	365
215.00	-85	-1	82	165	248	331	415

UC COOPERATIVE EXTENSION
TABLE 9. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
Second Year-TILL

SACRAMENTO VALLEY 2015

ANNUAL EQUIPMENT COSTS

No Equipment. All operations are hired through a custom farming operation

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT								
Establishment Costs 40 Ac	17,560	20	0	1,379	7	88	0	1,474
TOTAL INVESTMENT	17,560	-	0	1,379	7	88	0	1,474

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Office Expense	40	Acre	20.00	800
Liability Insurance 45Ac	45	Acre	13.93	627
Land Lease 40 Ac	40	Acre	180.00	7,200

UC COOPERATIVE EXTENSION
TABLE 10. OPERATIONS WITH EQUIPMENT & MATERIALS
TILL

SACRAMENTO VALLEY-2015

Operation	Operation Month	Tractor*	Implement*	Labor Type/ Material	Rate/ acre	Unit
Sub-Soil 24" 2X	Sept	240HP Tractor	Cook Chisel 18'	Chisel 18-24"	2.00	Acre
Fertilizer 16-20-0-24% S	Sept	45HP Tractor	Broadcast Spreader	Ammonium Sulfate 24% S	200.00	Lb
Disc & Roll 2X	Sept	240HP Tractor	Finish Disc 18' Roller 18'	Disc & Roll	2.00	Acre
Laser Level	Sept			Laser Level	1.00	Acre
Ridge Borders	Sept	45HP Tractor	Ridger	Ridge-Boarders	1.00	Acre
Irrigate-Flood 3X	Sept	ATV		Water Delivered	3.00	AcIn
	Oct	ATV		Water Delivered	3.00	AcIn
	Oct	ATV		Water Delivered	3.00	AcIn
Weed Control-Spray Herb	Sept	ATV	Sprayer	Ground Application	1.00	Acre
				Roundup UltraMax	2.00	Pint
Plant Pasture Mix-Fertilize	Sept	45HP Tractor	Brillion Seeder	Plant Pasture Mix	1.00	Acre
				Pasture Mix	18.00	Lb

*Equipment listed is owned-operated by custom farmer

UC COOPERATIVE EXTENSION
TABLE 10. OPERATIONS WITH EQUIPMENT & MATERIALS
NO-TILL
SACRAMENTO VALLEY-2015

Operation	Operation Month	Tractor*	Implement*	Labor Type/ Material	Rate/ acre	Unit
Weeds-Spray Out 2X	Sept	ATV	Sprayer	Ground Application	1.00	Acre
				Roundup UltraMax	2.00	Pint
	Oct	ATV	Sprayer	Ground Application	1.00	Acre
				Roundup UltraMax	2.00	Pint
Irrigate-Flood 2X	Oct	ATV		Water Delivered	5.00	AcIn
	Nov	ATV		Water Delivered	4.00	AcIn
Plant Pasture Mix-Fertilize	Oct	150HP Tractor	No-Till Planter	Plant Pasture Mix	1.00	Acre
				Pasture Mix	18.00	Lb
				Ammonium Sulfate 24% S	200.00	Lb

*Equipment listed is owned-operated by custom farmer

UC COOPERATIVE EXTENSION
TABLE 10. OPERATIONS WITH EQUIPMENT & MATERIALS
Second Year-TILL
SACRAMENTO VALLEY 2015

Operation	Operation Month	Tractor*	Implement*	Labor Type/ Material	Rate/ acre	Unit
Weeds-Spot Spray 2X	Mar	ATV	Sprayer	Roundup UltraMax	0.20	Pint
				2,4-D	0.20	Pint
	Apr	ATV	Sprayer	Ground Application	0.10	Acre
				Roundup UltraMax	0.20	Pint
				2,4-D	0.20	Pint
				Ground Application	0.10	Acre
Irrigate-Flood 7X	Apr	ATV		Water Delivered	7.00	AcIn
	May	ATV		Water Delivered	7.00	AcIn
	June	ATV		Water Delivered	9.00	AcIn
	July	ATV		Water Delivered	9.00	AcIn
	Aug	ATV		Water Delivered	9.00	AcIn
	Sept	ATV		Water Delivered	7.00	AcIn
	Oct	ATV		Water Delivered	6.00	AcIn
Fertilizer 46-0-0	June	45HP Tractor	Broadcast Spreader	Broadcast Fertilizer 46-0-0	1.00 200.00	Acre Lb
Harvest Hay	June	Swather 16'		Swath		
		45HP Tractor	Hay Rake 20'	Rake		
		45HP Tractor	Bailer	Bale		
		Bale Wagon		Roadside	2.00	Ton
	Sept	Swather 16'		Swath		
		45HP Tractor	Hay Rake 20'	Rake		
		45HP Tractor	Baler	Bale		
		Bale Wagon		Roadside	1.50	Ton

*Equipment listed is owned-operated by custom farmer