

1991
U.C. COOPERATIVE EXTENSION
SAMPLE COSTS TO ESTABLISH AND PRODUCE ALFALFA HAY
IN THE CENTRAL SAN JOAQUIN VALLEY

AF-SJ-91

by

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The detailed costs for alfalfa hay establishment and production in Central San Joaquin Valley are presented in this study. The hypothetical farm used in this report consists of 1200 acres of which 300 acres are in alfalfa hay production. The remainder of the farm is planted to different field crops.

Practices described are based on those production procedures considered typical for this crop and area. Sample costs given for labor, materials, equipment and contract services are based on current figures. Some costs and practices detailed in this study may not be applicable to your situation. This study is only intended as a guide and can be used in making production decisions, determining potential returns, preparing budgets and evaluating production loans. A blank **Your Costs** column is provided to enter your actual costs on **Table 1** and **Table 5**, **Costs Per Acre To Establish Alfalfa Hay** and **Costs Per Acre To Produce Alfalfa Hay**.

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

Table 1.	Costs Per Acre To Establish Alfalfa Hay
Table 2.	Monthly Cash Costs Per Acre To Establish Alfalfa Hay
Table 3.	Annual Equipment Costs for Alfalfa Hay Establishment
Table 4.	Hourly Equipment Costs For Alfalfa Hay Establishment
Table 5.	Costs Per Acre To Produce Alfalfa Hay
Table 6.	Monthly Cash Costs Per Acre To Produce Alfalfa Hay
Table 7.	Annual Equipment, Investment And Business Overhead Costs For Alfalfa Hay Production
Table 8.	Hourly Equipment Costs For Alfalfa Hay Production
Table 9.	Ranging Analysis
Table 10.	Costs And Returns / Breakeven Analysis

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

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**ASSUMPTIONS FOR ESTABLISHING AND PRODUCING
ALFALFA HAY
Central San Joaquin Valley - 1991
U.C. Cooperative Extension**

The following is a description of some general assumptions pertaining to sample costs of alfalfa hay establishment and production in Central San Joaquin Valley. These costs are represented on an annual, per acre basis.

1. LAND:

This cost of production study is based on a 1200 acre field and row crop operation of which 300 acres are dedicated to growing alfalfa. Other crops grown on the same acreage in rotation with alfalfa hay might include cereals grown for grain and hay, sugarbeets, silage corn, field corn and cotton. The land in this study is owned by the grower and is valued at \$2000 per acre. Land is not depreciated.

2. STAND ESTABLISHMENT:

Table 1, **Costs Per Acre To Establish Alfalfa Hay** shows the cost associated with ground preparation, planting and growing the alfalfa stand until the first production year. The alfalfa stand is planted in late summer/fall and the first year's hay is harvested over the following summer. To obtain stand establishment costs for an average production year, the total cost per acre to establish alfalfa hay in Table 1, is divided by the number of years of stand life, in this case 4. This becomes the establishment cost in the investment section of Table 5. The annual production cost in the study represents the second, third or fourth year's production cost.

3. CULTURAL PRACTICES:

Cultural, pesticide and fertilizer inputs for the production of alfalfa hay vary considerably from grower to grower and field to field. While a field can produce alfalfa hay for 4 to 5 years, disease and weed infestations may reduce this period by one or more years in this study. Four acre-feet of water is applied in eight irrigations from April through August. Water is pumped from two wells through an underground mainline to alfalfa valves to flood the field between borders. Pest control is managed with two applications of insecticides. Aphids and weevils are sprayed in April in the northern San Joaquin Valley and March in the southern regions of the valley. Worms are sprayed in July. Both spray applications are done by aircraft. A preplant, incorporated, herbicide application is applied to control winter annual weeds during establishment. Post emergence herbicides are applied to seedling stands when needed. Soil residual herbicides for winter weed control are applied in November and December to established stands. Summer grass control may be needed. The practices and inputs used in this cost study serve only as a sample or a guide. Variations as to cultural practices and inputs can be significant.

4. YIELDS & RETURNS:

The crop yield used in this study is 9 tons of hay per acre from eight cuttings per year. An estimated price of a \$100 per ton of hay is used in this study. Returns will vary and the \$100 per ton used in the cost study is, at best, an estimate taking into consideration current situations.

5. HARVEST:

In this cost study the ranch owns its own harvesting equipment and performs its own harvesting. Seven cuttings of hay is normal for the Valley, though an eighth cutting is possible in the late fall. If an eighth cutting is harvested, the most likely option is to have it green chopped for a dairy instead of baled. If the eighth is for a dairy, the grower normally pays for the swathing and the dairy is responsible for the rest of the operations. If a green chop is not possible due to distance or other factors then

sheeping off is another possibility. The equipment for harvest operations are inventoried, and labor, fuel, repairs, depreciation, and interest on investment, are calculated as a cost of production. If a grower contracts his harvest operation, all harvest equipment and its appropriate cost should be subtracted and a custom charge would then be added.

6. LABOR:

Basic hourly wages for workers are \$7.00 and \$4.45 per hour for machine operators and field workers (irrigator), respectively. Adding 34% for SDI, FICA, insurance and other benefits increases the labor rates shown to \$9.38 per hour for machine labor and \$6.10 per hour for non-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.

7. INVESTMENT:

The investments shown in Table 7 are those that are partially or completely allocated to the alfalfa hay operation. Costs of investments such as stand establishment and hay barn are attributed only to alfalfa hay and cannot be spread over the rest of the farms operations. Other investments including land, shop buildings and irrigation systems can be used by the whole farm so only a portion of the costs can be assigned to the alfalfa hay operation and the rest of the costs are distributed to the other farm enterprises. Annual investments shown in Tables 1 and 5 represent depreciation and opportunity cost for each investment on an annual per acre basis.

8. OVERHEAD:

County taxes are calculated as 1% of the average value of equipment, buildings and improvements. Insurance is charged at 0.5% of the average value of the equipment over its useful life. Office and business costs are estimated at \$30 per acre for the ranch. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road preparation and maintenance, etc.

9. INTEREST:

Interest on operating capital is based on cash costs and is calculated monthly for eleven months until harvest at the rate of 11.75% per year. Interest is also charged on investment at 12.05% per year to account for income foregone that could be received from an alternative investment (opportunity cost) and is based on the average value of the buildings and equipment.

10. EQUIPMENT COSTS:

In allocating the equipment costs per acre, the following calculations were made and shown in Table 3 and Table 7: (a) **Original Cost** of equipment is the cost of new equipment plus sales tax. (b) **Depreciation** is straight line with a ten percent salvage value. (c) **Interest** on investment is calculated as the average value per acre of the new cost of the equipment during its useful life cost per acre (average life = (new cost + salvage value)/2 on a per acre basis) multiplied by an interest rate of 12.05%. (d) **Total Investment Costs** are calculated as 60% of the depreciation and the interest costs for all new equipment to reflect a mix of the new and used equipment. These values are also used in Table 1 and Table 5. Most of this equipment is used on the entire 1200 acre ranch.

11. FUEL & REPAIR:

The fuel and repair cost per acre for each operation in Tables 1 and 5, is determined by multiplying the total hourly operating cost for each piece of equipment in Tables 4 and 8, by the number of hours per acre for that operation. Prices for on-farm delivery of gasoline and diesel are \$0.79 per gallon and \$1.00 per gallon respectively.

Table 1.

U.C. COOPERATIVE EXTENSION
 COSTS PER ACRE TO ESTABLISH ALFALFA HAY
 CENTRAL SAN JOAQUIN VALLEY - 1991

Labor Rates: \$ 9.38/hr. machine labor Interest Rate: 11.75%
 \$ 6.10/hr. non-machine labor Yield per Acre: 9 ton

Operation	Operation Time (Hrs/A)	Labor Cost	Fuel & Repairs	Cash and Labor Costs per Acre		Total Cost	Your Cost
				Material Cost	Custom/ Rent		
Cultural:							
Disc stubble - 2X	0.29	3.22	4.43	0.00	0.00	7.65	
Laser plane, custom	0.00	0.00	0.00	0.00	30.00	30.00	
Chisel field	0.31	3.52	4.20	0.00	0.00	7.72	
Fertilize, custom	0.00	0.00	0.00	14.00	4.75	18.75	
Pre-plant herbicide, custom	0.00	0.00	0.00	14.84	8.75	23.59	
Finish discing	0.29	3.22	3.69	0.00	0.00	6.91	
Border preparation	0.46	5.16	3.21	0.00	0.00	8.36	
Pre-irrigation - flood	0.18	1.10	0.00	16.56	0.00	17.66	
Plant	0.23	2.57	2.34	40.00	0.00	44.90	
Cover seed	0.19	2.15	1.46	0.00	0.00	3.61	
Post emergent herbicide, cust	0.00	0.00	0.00	4.82	5.50	10.32	
TOTAL CULTURAL COSTS	1.94	20.93	19.32	90.22	49.00	179.47	
Interest on operating capital @ 11.75%							16.94
TOTAL OPERATING COSTS/ACRE		20.93	19.32	90.22	49.00	196.41	
TOTAL OPERATING COSTS/TON							21.82
OVERHEAD:							
Office expense							30.00
Property Taxes							21.82
Equipment Insurance							10.91
Investment Repairs							2.46
TOTAL CASH OVERHEAD COSTS							65.19
TOTAL CASH COSTS/ACRE							261.59
TOTAL CASH COSTS/TON							29.07
NON-CASH OVERHEAD:							
Investment	Per producing Acre	Annual Cost		Interest @ 12.25%			
		Depreciation					
Land	2000.00			245.00		245.00	
Pickup #1, 3/4 ton	5.00	1.13		0.34		1.46	
Hay barn	87.50	4.38		5.36		9.73	
Storage building	6.25	0.31		0.38		0.70	
Shop Building	30.83	1.54		1.89		3.43	
ATV, 4wd	5.42	0.98		0.36		1.34	
Shop tools	8.33	0.50		0.56		1.06	
Irrigation system	108.08	4.32		6.62		10.94	
Equipment	100.27	7.75		6.76		14.50	
TOTAL NON-CASH OVERHEAD COSTS	2351.69	20.90		267.27		288.17	
TOTAL COSTS/ACRE							549.76
TOTAL COSTS/TON							61.08

Table 2.

U.C. COOPERATIVE EXTENSION
MONTHLY CASH COSTS PER ACRE TO ESTABLISH ALFALFA HAY
CENTRAL SAN JOAQUIN VALLEY

Beginning Ending	AUG 90 JUL 91	AUG 90	SEP 90	OCT 90	NOV 90	DEC 90	JAN 91	FEB 91	MAR 91	APR 91	MAY 91	JUN 91	JUL 91	TOTAL
Cultural:														
Disc stubble - 2X		7.6												8
Laser plane		30.0												30
Chisel field		7.7												8
Fertilize			18.8											19
Pre-plant herbicide			23.6											24
Finish discing			6.9											7
Border preparation			8.4											8
Pre-irrigation - flood			17.7											18
Plant				44.9										45
Cover seed				3.6										4
Post emergent herbicide								10.3						10
TOTAL CULTURAL COSTS		45.4	75.3	48.5				10.3						179
Interest on oper. capital		0.4	1.2	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8		17
TOTAL OPERATING COSTS/ACRE		45.8	76.5	50.2	1.7	1.7	1.7	1.7	12.1	1.8	1.8	1.8		196
TOTAL OPERATING COSTS/TON		5.1	8.5	5.6	0.2	0.2	0.2	0.2	1.3	0.2	0.2	0.2		22
OVERHEAD:														
Office expense			30.0											30
Property Taxes												21.8		22
Equipment Insurance												10.9		11
Investment Repairs		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		2
TOTAL CASH OVERHEAD COSTS		0.2	30.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	33.0		65
TOTAL CASH COSTS/ACRE		46.0	106.7	50.4	1.9	1.9	1.9	1.9	12.3	2.0	2.0	34.7		262
TOTAL CASH COSTS/TON		5.1	11.9	5.6	0.2	0.2	0.2	0.2	1.4	0.2	0.2	3.9		29

Table 3. ANNUAL EQUIPMENT COSTS FOR ALFALFA HAY ESTABLISHMENT

Yr	Description	Price	Yrs Life	- Non-Cash Over. -		- Cash Overhead -		Total
				Depre- ciation	Interest	Insur- ance	Taxes	
90	130 hp 2wd tractor	66000	10	5940.00	4446.75	181.50	363.00	10931.25
90	80 hp 2wd tractor	42000	10	3780.00	2829.75	115.50	231.00	6956.25
90	Border disc	1065	15	63.87	71.79	2.93	5.86	144.45
90	Chisel, heavy 11'	5300	15	318.00	357.09	14.58	29.15	718.82
90	Cultipacker, 12'	3250	15	195.00	218.97	8.94	17.88	440.79
90	Disc, finish, 16'	21600	15	1296.00	1455.30	59.40	118.80	2929.50
90	Disc, stubble, 16'	12500	15	750.00	842.19	34.38	68.75	1695.32
90	Pickup, 3/4 ton	16000	7	2057.14	1078.00	44.00	88.00	3267.14
90	Seeder, alfalfa	7100	7	912.86	478.36	19.52	39.05	1449.79
TOTAL		174815		15312.87	11778.20	480.75	961.49	28533.31
60% of New Cost *		104889		9187.72	7066.92	288.45	576.89	17119.99

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

Table 4. HOURLY EQUIPMENT COSTS FOR ALFALFA HAY ESTABLISHMENT

Yr	Description	Actual Hours Used	----- COSTS PER HOUR -----							Total Costs/Hr.
			-Non-Cash Over- Depre- ciation	- Interest	- Cash Overhead - Insur- ance	Taxes	Repairs	Operating Fuel & Lube	Total Oper.	
90	130 hp 2wd tractor	1413.2	2.52	1.89	0.08	0.15	3.96	6.85	10.81	15.45
90	80 hp 2wd tractor	1230.8	1.84	1.38	0.06	0.11	2.52	3.57	6.09	9.48
90	Border disc	165.4	0.23	0.26	0.01	0.02	0.31	0.00	0.31	0.83
90	Chisel, heavy 11'	93.9	2.03	2.28	0.09	0.19	1.52	0.00	1.52	6.12
90	Cultipacker, 12'	165.3	0.71	0.79	0.03	0.06	0.94	0.00	0.94	2.54
90	Disc, finish, 16'	165.8	4.69	5.27	0.21	0.43	6.20	0.00	6.20	16.81
90	Disc, stubble, 16'	165.8	2.71	3.05	0.12	0.25	3.59	0.00	3.59	9.72
90	Pickup, 3/4 ton	267.0	4.62	2.42	0.10	0.20	2.83	2.30	5.13	12.47
90	Seeder, alfalfa	170.4	3.21	1.68	0.07	0.14	3.56	0.00	3.56	8.66

Table 5.

U.C. COOPERATIVE EXTENSION
 COSTS PER ACRE TO PRODUCE ALFALFA HAY
 CENTRAL SAN JOAQUIN VALLEY - 1991

Labor Rates: \$ 9.38/hr. machine labor Interest Rate: 11.75%
 \$ 6.10/hr. non-machine labor Yield per Acre: 9 ton

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel & Repairs	Material Cost	Custom/ Rent			
Cultural:								
Make drains	0.02	0.23	0.20	0.00	0.00	0.42		
Irrigate - flood	1.44	8.78	0.00	99.36	0.00	108.14		
Spray for aphid & weevil	0.00	0.00	0.00	11.26	5.00	16.26		
Spray for worm control	0.00	0.00	0.00	11.50	5.00	16.50		
Pickup use	0.60	6.75	3.08	0.00	0.00	9.83		
TOTAL CULTURAL COSTS	2.06	15.76	3.28	122.12	10.00	151.16		
Harvest:								
Swath hay	1.40	15.76	21.91	0.00	0.00	37.67		
Windrow hay	1.08	12.12	9.03	0.00	0.00	21.15		
Bale hay	0.50	5.63	15.23	70.00	0.00	90.85		
Pickup & roadside hay	0.70	7.88	15.69	0.00	0.00	23.57		
TOTAL HARVEST COSTS	3.68	41.39	61.85	70.00	0.00	173.24		
Postharvest:								
Fertilize	0.00	0.00	0.00	10.00	3.00	13.00		
Winter weed control	0.00	0.00	0.00	4.15	5.00	9.15		
TOTAL POSTHARVEST COSTS	0.00	0.00	0.00	14.15	8.00	22.15		
Interest on operating capital @ 11.75%						13.15		
TOTAL OPERATING COSTS/ACRE		57.15	65.13	206.27	18.00	359.70		
TOTAL OPERATING COSTS/TON						39.97		
CASH OVERHEAD:								
Office expense						30.00		
Property Taxes						26.72		
Equipment Insurance						13.36		
Investment Repairs						2.25		
TOTAL CASH OVERHEAD COSTS						72.33		
TOTAL CASH COSTS/ACRE						432.03		
TOTAL CASH COSTS/TON						48.00		

U.C. COOPERATIVE EXTENSION

Table 5. continued

CASH OVERHEAD:	Per producing Acre	Annual Cost		
		Depreciation	Interest @ 12.05%	
Investment				
Land	2000.00		241.00	241.00
Hay barn	87.50	4.38	5.27	9.65
Shop Building	30.83	1.54	1.86	3.40
ATV, 4wd	5.42	0.98	0.36	1.33
Shop tools	8.33	0.50	0.55	1.05
Irrigation system	108.08	4.32	6.51	10.84
Establishment cost	549.76	137.44	33.12	170.56
Equipment	495.30	45.23	32.83	78.05
TOTAL NON-CASH OVERHEAD COSTS	3285.22	194.38	321.50	515.88
TOTAL COSTS/ACRE				947.86
TOTAL COSTS/TON				105.32

Table 6.

U.C. COOPERATIVE EXTENSION
MONTHLY CASH COSTS PER ACRE TO PRODUCE ALFALFA
CENTRAL SAN JOAQUIN VALLEY - 1991

Beginning	MAR 91	APR 91	MAY 91	JUN 91	JUL 91	AUG 91	SEP 91	OCT 91	NOV 91	DEC 91	JAN 92	FEB 92	TOTAL
Ending	FEB 92												
Cultural:													
Make drains		0.4											0
Irrigate - flood		13.5	13.5	13.5	27.0	27.0	13.5						108
Spray for aphid & weevil	16.3												16
Spray for worm control					16.5								16
Pickup use										9.8			10
TOTAL CULTURAL COSTS	16.3	13.9	13.5	13.5	43.5	27.0	13.5			9.8			151
Harvest:													
Swath hay		5.4	5.4	5.4	5.4	5.4	5.4	5.4					38
Windrow hay		3.0	3.0	3.0	3.0	3.0	3.0	3.0					21
Bale hay		13.0	13.0	13.0	13.0	13.0	13.0	13.0					91
Pickup & roadside hay		3.4	3.4	3.4	3.4	3.4	3.4	3.4					24
TOTAL HARVEST COSTS		24.7	24.7	24.7	24.7	24.7	24.7	24.7					173
Postharvest:													
Fertilize									13.0				13
Winter weed control										9.2			9
TOTAL POSTHARVEST COSTS									13.0	9.2			22
Interest on oper. capital	0.2	0.5	0.9	1.3	2.0	2.5	2.8	3.1					13
TOTAL OPERATING COSTS/ACRE	16.4	39.2	39.2	39.6	70.2	54.2	41.1	27.8	13.0	19.0			360
TOTAL OPERATING COSTS/TON	1.8	4.4	4.4	4.4	7.8	6.0	4.6	3.1	1.4	2.1			40
OVERHEAD:													
Office expense									30.0				30
Property Taxes				26.7									27
Equipment Insurance				13.3									13
Investment Repairs	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2			2
TOTAL CASH OVERHEAD COSTS	0.2	0.2	0.2	40.2	0.2	0.2	0.2	30.2	0.2	0.2			72
TOTAL CASH COSTS/ACRE	16.6	39.5	39.4	79.8	70.5	54.5	41.3	58.1	13.2	19.2			432
TOTAL CASH COSTS/TON	1.8	4.4	4.4	8.9	7.8	6.1	4.6	6.5	1.5	2.1			48

Table 7.

U.C. COOPERATIVE EXTENSION
ANNUAL EQUIPMENT, INVESTMENT AND BUSINESS OVERHEAD COSTS FOR ALFALFA HAY PRODUCTION
CENTRAL SAN JOAQUIN VALLEY - 1991

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Depre- ciation	Interest	- Non-Cash Over. - - Insur- ance	- Cash Overhead - Taxes	Total
90	60 hp 2wd tractor	38200	10	3438.00	2531.71	105.05	210.10	6284.86
90	80 hp 2wd tractor	42000	10	3780.00	2783.55	115.50	231.00	6910.05
90	Baler, engine driven, #1	42000	10	3780.00	2783.55	115.50	231.00	6910.05
90	Baler, engine driven, #2	42000	10	3780.00	2783.55	115.50	231.00	6910.05
90	Balewagon, SP	73000	10	6570.00	4838.07	200.75	401.50	12010.32
90	Ditcher, V	11200	15	672.00	742.28	30.80	61.60	1506.68
90	Pickup, 3/4 ton	16000	7	2057.14	1060.40	44.00	88.00	3249.54
90	Rake, CD 20'	13000	10	1170.00	861.57	35.75	71.50	2138.82
90	Swather, SP 14'	44000	10	3960.00	2916.10	121.00	242.00	7239.10
TOTAL		321400		29207.14	21300.78	883.85	1767.70	53159.47
60% of New Cost *		192840		17524.28	12780.47	530.31	1060.62	31895.68

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

ANNUAL INVESTMENT COSTS

Yr	Description	Price	Yrs Life	Depre- ciation	Interest	- Non-Cash Over. - - Insur- ance	- Cash Overhead - Taxes	Repairs	Total
INVESTMENT									
	ATV, 4wd	6500	5	1170.00	430.79	17.88	35.75	50.00	1704.42
	Establishment cost	164928	4	41232.00	9936.91	412.32	824.64	0.00	52405.87
	Hay barn	26250	20	1312.50	1581.56	65.63	131.25	200.00	3290.94
	Irrigation system	129700	25	5188.00	7814.42	324.25	648.50	1500.00	15475.17
	Land	2400000			289200.00	12000.00	24000.00	0.00	325200.00
	Shop Building	37000	20	1850.00	2229.25	92.50	185.00	250.00	4606.75
	Shop tools	10000	15	600.00	662.75	27.50	55.00	100.00	1445.25
TOTAL INVESTMENT		2774378		51352.50	311855.68	12940.08	25880.14	2100.00	404128.40

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Office expense	1200.00	acre	30.00	36000.00

Table 8.

U.C. COOPERATIVE EXTENSION
 HOURLY EQUIPMENT COSTS FOR ALFALFA HAY PRODUCTION
 CENTRAL SAN JOAQUIN VALLEY

Yr Description	----- COSTS PER HOUR -----								Total Costs/Hr.
	Actual Hours Used	-Non-Cash Over- Depre- ciation	Over.- Interest	- Cash Overhead - Insur- ance	Taxes	Repairs	Operating Fuel & Lube	Total Oper.	
90 Baler, engine, #1	165.0	13.74	10.12	0.42	0.84	6.11	2.30	8.41	33.53
90 Baler, engine, #2	165.0	13.74	10.12	0.42	0.84	6.11	2.30	8.41	33.53
90 Balewagon, SP	231.0	17.06	12.57	0.52	1.04	14.02	6.36	20.38	51.57
90 Ditcher, V	166.0	2.43	2.68	0.11	0.22	3.22	0.00	3.22	8.66
90 Pickup, 3/4 ton	330.0	3.74	1.93	0.08	0.16	2.83	2.30	5.13	11.04
90 Rake, CD 20'	323.1	2.17	1.60	0.07	0.13	3.13	0.00	3.13	7.10
90 Swather, SP 14'	462.0	5.14	3.79	0.16	0.31	10.60	3.63	14.23	23.63
90 Rake									
90 Swather									

Table 9.

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
CENTRAL SAN JOAQUIN VALLEY - 1991

COST PER ACRE AT VARYING YIELDS TO PRODUCE ALFALFA HAY

	YIELD (TON/ACRE)						
	7.5	8.0	8.5	9.0	9.5	10.0	10.5
OPERATING COSTS/ACRE:							
Cultural Cost	151	151	151	151	151	151	151
Harvest Cost	154	160	167	173	180	186	193
Postharvest Cost	22	22	22	22	22	22	22
Interest on operating capital	12	13	13	13	13	14	14
TOTAL OPERATING COSTS/ACRE	339	346	353	360	367	373	380
TOTAL OPERATING COSTS/TON	45.24	43.26	41.52	39.97	38.58	37.33	36.20
CASH OVERHEAD COSTS/ACRE	72	72	72	72	72	72	72
TOTAL CASH COSTS/ACRE	412	418	425	432	439	446	452
TOTAL CASH COSTS/TON	54.87	52.29	50.02	48.00	46.19	44.56	43.09
NON-CASH OVERHEAD COSTS/ACRE	516	516	516	516	516	516	516
TOTAL COSTS/ACRE	927	934	941	948	955	962	969
TOTAL COSTS/TON	123.62	116.76	110.70	105.32	100.50	96.17	92.24

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS Table 9. continued

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR ALFALFA HAY

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	7.5	8.0	8.5	9.0	9.5	10.0	10.5
85.00	298	334	370	405	441	477	512
90.00	336	374	412	450	488	527	565
95.00	373	414	455	495	536	577	617
100.00	411	454	497	540	583	627	670
105.00	448	494	540	585	631	677	722
110.00	486	534	582	630	678	727	775
115.00	523	574	625	675	726	777	827

NET RETURNS PER ACRE ABOVE CASH COSTS FOR ALFALFA HAY

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	7.5	8.0	8.5	9.0	9.5	10.0	10.5
85.00	226	262	297	333	369	404	440
90.00	263	302	340	378	416	454	493
95.00	301	342	382	423	464	504	545
100.00	338	382	425	468	511	554	598
105.00	376	422	467	513	559	604	650
110.00	413	462	510	558	606	654	703
115.00	451	502	552	603	654	704	755

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR ALFALFA HAY

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	7.5	8.0	8.5	9.0	9.5	10.0	10.5
85.00	-290	-254	-218	-183	-147	-112	-76
90.00	-252	-214	-176	-138	-100	-62	-24
95.00	-215	-174	-133	-93	-52	-12	29
100.00	-177	-134	-91	-48	-5	38	81
105.00	-140	-94	-48	-3	43	88	134
110.00	-102	-54	-6	42	90	138	186
115.00	-65	-14	37	87	138	188	239

Table 10.

U.C. COOPERATIVE EXTENSION
 COSTS AND RETURNS / BREAKEVEN ANALYSIS
 CENTRAL SAN JOAQUIN VALLEY

COSTS AND RETURNS - PER ACRE BASIS

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Alfalfa	900	360	540	432	468	948	-48

COSTS AND RETURNS - TOTAL ACREAGE

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Alfalfa	270000	107911	162089	129593	140407	284357	-14357
TOTAL	270000	107911	162089	129593	140407	284357	-14357

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	Breakeven Price To Cover		
			Operating Costs	Cash Costs	Total Costs
Alfalfa	9.0	ton	39.97	48.00	105.32

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

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	Breakeven Yield To Cover		
			Operating Costs	Cash Costs	Total Costs
Alfalfa	ton	100.00	3.6	4.3	9.5

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