

# U.C. COOPERATIVE EXTENSION

## SAMPLE COSTS TO PRODUCE DOUBLE CROPPED OAT HAY IN THE SAN JOAQUIN VALLEY

by

Carol Collar, Kings Co.  
Gerald Higginbotham, Fresno Co.  
Steve Sutter, Fresno Co.  
Ron Vargas, Madera Co.  
Steve Wright, Tulare Co.  
Karen Klonsky, Extension Economist, U.C. Davis  
and  
Pete Livingston, Staff Research Associate, U.C. Davis

The detailed costs for double cropped oat hay production in the 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 oat 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 1990 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, Costs Per Acre To Produce Double-Cropped Oat Hay**. This study consists of **General Assumptions for Producing Double-Cropped Oat Hay**, and five tables.

- Table 1. **Costs Per Acre To Produce Oat Hay**
- Table 2. **Monthly Cash Costs Per Acre to Produce Oat Hay**
- Table 3. **Annual Equipment, Investment And Business Overhead Costs**
- Table 4. **Ranging Analysis**
- Table 5. **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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**GENERAL ASSUMPTIONS FOR PRODUCING  
DOUBLE CROPPED OAT HAY  
*San Joaquin Valley - 1990*  
U.C. Cooperative Extension**

The following is a description of some general assumptions pertaining to sample costs of double cropped oat hay production in the San Joaquin Valley.

**1. LAND:**

This cost of production study is based on a 1,200 acre field and row crop operation of which 300 acres are dedicated to growing oat hay. Other crops grown on the same acreage in rotation with oat hay might include wheat, field corn, alfalfa hay, barley, corn silage, cotton, etc.

**2. RENT AGREEMENT:**

The land used for oat hay production in this study is rented on a cash per acre basis. Under this agreement the landowner receives \$100 per acre from the tenant. Since the land is double cropped only half of the land rent, or \$50 per acre, is charged to the oat hay. The landowner maintains the irrigation system on the rented land. Interest cost for land and irrigation system is incurred by the landowner. Land is not depreciated.

**3. CULTURAL PRACTICES:**

The cultural, pesticide and fertilizer inputs for the production of oat hay vary considerably from grower to grower and field to field. In this study primary tillage is done between November and December. A preplant fertilizer is applied by custom applicators. Seed is planted with a grain drill. Fertilizer and herbicides are custom applied by air. 10 acre-inches of water are utilized in two equal irrigations during the season. Harvest is done by a custom operator who swathes, rakes, bales, and roadsides the hay. Variations as to cultural practices and inputs can be significant.

**4. YIELDS & RETURNS:**

The crop yield used in this study is 3.5 tons per acre. An estimated price of a \$80 per ton is used in this study.

**5. HARVEST:**

It was decided, in this cost study, to use contract price for custom harvesting. A grower doing his own harvesting should inventory the equipment for the required operations, and calculate labor, fuel, repairs, depreciation, interest on investment etc. as a cost of production.

**6. LABOR:**

Basic hourly wages for workers are \$6.20 and \$4.75 per hour for skilled and field workers, respectively. Adding 34% for SDI, FICA, insurance and other benefits gives the labor rates shown of \$8.31 per hour for skilled labor and \$6.37 per hour for field labor. The labor for operations using machinery are 10% higher than the machine hours to account for the extra labor involved in equipment set-up, moving, maintenance and repair.

**7. OVERHEAD:**

County taxes are calculated as 1% of the average of the equipment, buildings and improvements. Insurance is charged at 1% of the average value of the equipment over its useful life. Office and business costs are estimated at \$20 per acre for the ranch. These

expenses include office supplies, phone, bookkeeping, accounting, legal fees, road preparation and maintenance, etc. All of the overhead is charged at half of the per acre cost for oat hay since the acreage is double cropped.

#### **8. INTEREST:**

Interest on operating capital is based on cash costs and is calculated monthly for nine months until harvest at a rate of 12.5% per year. Interest is also charged on investment at 12% 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 of the buildings and equipment.

#### **9. EQUIPMENT COSTS:**

In allocating the equipment costs per acre, the following calculations were made and shown in **Table 3**: (a) **Original Cost** of equipment is the cost of the new equipment plus sales tax. (b) **Depreciation** is straight line with no salvage value. (c) **Interest** on investment is calculated as one-half the new cost per acre (the average value of the equipment during its useful life) multiplied by an interest rate of 12%. (d) The **total investment** costs are also 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**. Most of this equipment is used on the entire 1200 acre ranch.

#### **10. FUEL & REPAIR:**

The fuel and repair cost for each operation is determined by multiplying the total hourly operating cost for each piece of equipment by the number of hours per acre for that operation. On-farm delivery prices for gasoline and diesel are \$0.85 per gallon and \$1.03 per gallon respectively.

U.C. COOPERATIVE EXTENSION

Table 1.

COSTS PER ACRE TO PRODUCE OAT HAY

SAN JOAQUIN VALLEY - 1990

Labor Rate: \$8.31/hr. machine labor  
\$6.37/hr. non-machine labor

Interest Rate: 12.50%  
Yield per Acre: 3.50 ton

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:								
Disc stubble	0.14	1.43	2.54	0.00	0.00	3.97		
Chisel light	0.27	2.67	4.23	0.00	0.00	6.90		
Triplane .5X	0.14	1.38	1.83	0.00	0.00	3.20		
Finish disc 2X	0.12	1.23	1.79	0.00	0.00	3.02		
Put up borders	0.02	0.20	0.13	0.00	0.00	0.33		
Preplant fertilize	0.00	0.00	0.00	11.20	5.16	16.36		
Plant	0.26	2.56	2.02	18.00	0.00	22.58		
Fertilize, custom	0.00	0.00	0.00	13.00	5.00	18.00		
Herbicide, custom	0.00	0.00	0.00	2.94	5.00	7.94		
Open ditch	0.01	0.10	0.08	0.00	0.00	0.18		
Irrigate	0.28	1.78	0.00	27.24	0.00	29.02		
Close ditch	0.01	0.10	0.12	0.00	0.00	0.22		
<b>TOTAL CULTURAL COSTS</b>	<b>1.25</b>	<b>11.45</b>	<b>12.72</b>	<b>72.39</b>	<b>15.16</b>	<b>111.71</b>		
Harvest:								
Harvest, custom	0.00	0.00	0.00	0.00	72.22	72.22		
<b>TOTAL HARVEST COSTS</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>72.22</b>	<b>72.22</b>		
Interest on operating capital @ 12.50%						7.43		
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>11.45</b>	<b>12.72</b>	<b>72.39</b>	<b>87.38</b>	<b>191.36</b>		
CASH OVERHEAD:								
Land rent						50.00		
Office expense						10.00		
Property Taxes						0.44		
Property Insurance						0.22		
Investment Repairs						0.79		
<b>TOTAL CASH OVERHEAD COSTS</b>						<b>61.45</b>		
<b>TOTAL CASH COSTS/ACRE</b>						<b>252.81</b>		
NON-CASH OVERHEAD:								
Investment		Per producing Acre		-- Annual Cost --				
				Capital Recovery				
Buildings		62.50		7.97		7.97		
Siphon tubes		1.42		0.31		0.31		
Fuel tanks & equip		5.83		0.86		0.86		
Shop tools		10.00		1.71		1.71		
Pickup, new		15.00		3.14		3.14		
Pickup, used		3.33		0.87		0.87		
Equipment		69.05		11.42		11.42		
<b>TOTAL NON-CASH OVERHEAD COSTS</b>		<b>167.13</b>		<b>26.28</b>		<b>26.28</b>		
<b>TOTAL COSTS/ACRE</b>						<b>279.09</b>		

Table 2.

U. C. COOPERATIVE EXTENSION  
MONTHLY CASH COSTS PER ACRE TO PRODUCE OAT HAY

Beginning NOV 89	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	TOTAL
Ending OCT 90	89	89	90	90	90	90	90	90	90	90	90	90	
-----													
Cultural:													
Disc stubble	3.74												3.74
Chisel light	6.49												6.49
Triplane .5X	2.81												2.81
Finish disc 2X		2.84											2.84
Put up borders		0.33											0.33
Preplant fertilize		16.36											16.36
Plant		22.38											22.38
Fertilize, custom				18.00									18.00
Herbicide, custom				7.94									7.94
Open ditch					0.18								0.18
Irrigate					14.51	14.51							29.02
Close ditch								0.22					0.22
TOTAL CULTURAL COSTS	13.04	41.91		25.95	14.69	14.51		0.22					110.31
-----													
Harvest:													
Harvest, custom								72.22					72.22
TOTAL HARVEST COSTS								72.22					72.22
-----													
Interest on oper. capital	0.14	0.57	0.57	0.84	1.00	1.15	1.15	1.90					7.31
TOTAL OPERATING COSTS/ACRE	13.17	42.49	0.57	26.79	15.68	15.66	1.15	74.34					189.85
-----													
OVERHEAD:													
Land rent											50.00		50.00
Office expense											10.00		10.00
Property Taxes						0.21				0.21			0.43
Property Insurance			0.21										0.21
Investment Repairs	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.79
TOTAL CASH OVERHEAD COSTS	0.07	0.07	0.28	0.07	0.07	0.28	0.07	0.07	0.07	0.28	60.07	0.07	61.44
-----													
TOTAL CASH COSTS/ACRE	13.24	42.55	0.85	26.85	15.75	15.94	1.21	74.40	0.07	0.28	60.07	0.07	251.28
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Table 3.

U. C. COOPERATIVE EXTENSION  
WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS  
SAN JOAQUIN VALLEY

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead -		Total
						Insur- ance	Taxes	
90	130 hp 2wd Tractor	66000	10	6600	11304.80	90.75	181.50	11577.05
90	200 hp 4wd Tractor	94000	10	9400	16100.80	129.25	258.50	16488.55
90	80 hp 2wd Tractor	42000	10	4200	7194.00	57.75	115.50	7367.25
90	Border disc	1065	15	107	153.50	1.47	2.93	157.90
90	Chisel, heavy 11'	5300	15	530	763.95	7.29	14.58	785.82
90	Disc, finish, 21'	12500	15	1250	1801.77	17.19	34.38	1853.34
90	Disc, stubble, 16'	12500	15	1250	1801.77	17.19	34.38	1853.34
90	Ditcher, 5'	5300	15	530	763.95	7.29	14.58	785.82
90	Grain drill	8500	7	850	1778.25	11.69	23.38	1813.32
90	Rear blade, 3pt 8'	1900	15	190	273.87	2.61	5.22	281.70
90	Triplane, 16'	16000	15	1600	2306.27	22.00	44.00	2372.27
TOTAL		265065		26507	44242.93	364.48	728.95	45336.36
60% of New Cost *		159039		15904	26545.76	218.69	437.37	27201.82

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

ANNUAL INVESTMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	----- Cash Overhead -----			Total
						Insur- ance	Taxes	Repairs	
INVESTMENT									
	Buildings	75000	25		9562.50	93.75	187.50	350.00	10193.75
	Fuel tanks & equip	7000	15		1027.77	8.75	17.50	50.00	1104.02
	Pickup, new	18000	7	1800	3765.71	24.75	49.50	200.00	4039.96
	Pickup, used	4000	5	400	1046.68	5.50	11.00	200.00	1263.18
	Shop tools	12000	10	1200	2055.43	16.50	33.00	100.00	2204.93
	Siphon tubes	1700	7		372.50	2.13	4.25	50.00	428.88
TOTAL INVESTMENT		117700		3400	17830.59	151.38	302.75	950.00	19234.72

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land rent	300.00	acre	50.00	15000.00
Office expense	1200.00	acre	10.00	12000.00

Table 4.

U. C. COOPERATIVE EXTENSION  
RANGING ANALYSIS

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE OAT HAY							
	YIELD (TON/ACRE)						
	2.0	2.5	3.0	3.5	4.0	4.5	5.0
OPERATING COSTS/ACRE:							
Cultural Cost	110	110	110	110	110	110	110
Harvest Cost	41	52	62	72	83	93	103
Interest on operating capital	7	7	7	7	7	8	8
TOTAL OPERATING COSTS/ACRE	159	169	179	190	200	211	221
TOTAL OPERATING COSTS/TON	79.29	67.60	59.81	54.24	50.07	46.82	44.22
CASH OVERHEAD COSTS/ACRE	61	61	61	61	61	61	61
TOTAL CASH COSTS/ACRE	220	230	241	251	262	272	283
TOTAL CASH COSTS/TON	110.01	92.18	80.29	71.80	65.43	60.47	56.51
NON-CASH OVERHEAD COSTS/ACRE	26	26	26	26	26	26	26
TOTAL COSTS/ACRE	246	256	267	277	287	298	308
TOTAL COSTS/TON	122.85	102.45	88.85	79.13	71.85	66.18	61.65

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR OAT HAY							
PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Hay							
50.00	-59	-44	-29	-15	-0	14	29
60.00	-39	-19	1	20	40	59	79
70.00	-19	6	31	55	80	104	129
80.00	1	31	61	90	120	149	179
90.00	21	56	91	125	160	194	229
100.00	41	81	121	160	200	239	279
110.00	61	106	151	195	240	284	329

NET RETURNS PER ACRE ABOVE CASH COSTS FOR OAT HAY							
PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Hay							
50.00	-120	-105	-91	-76	-62	-47	-33
60.00	-100	-80	-61	-41	-22	-2	17
70.00	-80	-55	-31	-6	18	43	67
80.00	-60	-30	-1	29	58	88	117
90.00	-40	-5	29	64	98	133	167
100.00	-20	20	59	99	138	178	217
110.00	-0	45	89	134	178	223	267

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR OAT HAY							
PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Hay							
50.00	-146	-131	-117	-102	-87	-73	-58
60.00	-126	-106	-87	-67	-47	-28	-8
70.00	-106	-81	-57	-32	-7	17	42
80.00	-86	-56	-27	3	33	62	92
90.00	-66	-31	3	38	73	107	142
100.00	-46	-6	33	73	113	152	192
110.00	-26	19	63	108	153	197	242

Table 5.

U. C. COOPERATIVE EXTENSION  
 COSTS AND RETURNS / BREAKEVEN ANALYSIS  
 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)
Oat Hay	280	190	90	251	29	277	3

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)
Oat Hay	84000	56954	27046	75385	8615	83049	951
TOTAL	84000	56954	27046	75385	8615	83049	951

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	Breakeven Price To Cover		
			Operating Costs	Cash Costs	Total Costs
Oat Hay	3.5	ton	54.24	71.80	79.09

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	Breakeven Yield To Cover		
			Operating Costs	Cash Costs	Total Costs
Oat Hay	ton	80.00	2.4	3.1	3.5