

U.C. COOPERATIVE EXTENSION SAMPLE COSTS TO PRODUCE DOUBLE CROPPED OAT HAY IN THE SAN JOAQUIN VALLEY

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by

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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 Double-Cropped 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 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 pre-plant 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, depreciation, repairs, 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 overhead expenses are charged at half of the per

acre cost for oat hay since it is double cropped.

8. INTEREST:

Interest on operating capital is based on cash costs and is calculated monthly, for nine months, until harvest at the 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 of 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 fuel are \$0.85 per gallon and \$1.03 per gallon respectively.

Table. 1

U.C. COOPERATIVE EXTENSION
 COST PER ACRE TO PRODUCE DOUBLE CROPPED OAT HAY
 SAN JOAQUIN VALLEY - 1990

Labor Rate: \$ 8.31/hr. machine labor Interest Rate: 12.50%
 \$ 6.37/hr. non-machine labor Yield per Acre: 3.50 ton

Operation	Operation	Cash and Labor Costs per Acre					Total Cost	Your Cost
	Time (Hrs/A)	Labor Cost	Fuel & Repairs	Material Cost	Custom/Rent			
Cultural:								
Disc stubble	0.14	1.43	3.04	0.00	0.00	4.46		
Chisel light	0.27	2.67	5.14	0.00	0.00	7.81		
Triplane .5X	0.14	1.38	2.04	0.00	0.00	3.42		
Finish disc 2X	0.12	1.23	1.97	0.00	0.00	3.20		
Put up borders	0.02	0.20	0.15	0.00	0.00	0.35		
Preplant fertilize	0.00	0.00	0.00	11.20	5.16	16.36		
Plant	0.26	2.56	2.89	18.00	0.00	23.46		
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	0.09	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	0.13	0.00	0.00	0.23		
TOTAL CULTURAL COSTS	1.25	11.45	15.45	72.39	15.16	114.44		
Harvest:								
Harvest, custom	0.00	0.00	0.00	0.00	72.22	72.22		
TOTAL HARVEST COSTS	0.00	0.00	0.00	0.00	72.22	72.22		
Interest on operating capital @ 12.50%						5.70		
TOTAL OPERATING COSTS/ACRE		11.45	15.45	72.39	87.38	192.35		
TOTAL OPERATING COSTS/TON						54.96		
CASH OVERHEAD:								
Land rent						50.00		
Office expense						10.00		
Property Taxes						0.44		
Equipment Insurance						0.22		
Investment Repairs						0.79		
TOTAL CASH OVERHEAD COSTS						61.45		
TOTAL CASH COSTS/ACRE						253.81		
TOTAL CASH COSTS/TON						72.52		

Table. 1 continued

NON-CASH OVERHEAD:

Investment	Per producing Acre	Annual Cost		
		Depreciation	Interest @ 12.50%	
Buildings	62.50	2.50	3.75	6.25
Siphon tubes	1.42	0.20	0.09	0.29
Fuel tanks & equip	5.83	0.39	0.35	0.74
Shop tools	10.00	0.90	0.66	1.56
Pickup, new	15.00	1.93	0.99	2.92
Pickup, used	3.33	0.60	0.22	0.82
Equipment	69.05	5.74	4.56	10.29
TOTAL NON-CASH OVERHEAD COSTS	167.13	12.26	10.61	22.87
TOTAL COSTS/ACRE				276.68
TOTAL COSTS/TON				79.05

Beginning NOV 89 Ending OCT 90	NOV 89	DEC 89	JAN 90	FEB 90	MAR 90	APR 90	MAY 90	JUN 90	JUL 90	AUG 90	SEP 90	OCT 90	TOTAL
Cultural:													
Disc stubble	4.5												4
Chisel light	7.8												8
Triplane .5X	3.4												3
Finish disc 2X		3.2											3
Put up borders		0.3											0
Preplant fertilize		16.4											16
Plant		23.5											23
Fertilize, custom				18.0									18
Herbicide, custom				7.9									8
Open ditch					0.2								0
Irrigate					14.5	14.5							29
Close ditch								0.2					0
TOTAL CULTURAL COSTS	15.7	43.4		25.9	14.7	14.5		0.2					114
Harvest:													
Harvest, custom								72.2					72
TOTAL HARVEST COSTS								72.2					72
Interest on oper. capital	0.2	0.6	0.6	0.9	1.0	1.2	1.2						6
TOTAL OPERATING COSTS/ACRE	15.9	44.0	0.6	26.8	15.7	15.7	1.2	72.4					192
TOTAL OPERATING COSTS/TON	4.5	12.6	0.2	7.7	4.5	4.5	0.3	20.7					55
OVERHEAD:													
Land rent											50.0		50
Office expense											10.0		10
Property Taxes						0.2				0.2			0
Equipment Insurance			0.2										0
Investment Repairs	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1					1
TOTAL CASH OVERHEAD COSTS	0.1	0.1	0.3	0.1	0.1	0.3	0.1	0.1		0.2	60.0		61
TOTAL CASH COSTS/ACRE	16.0	44.1	0.9	26.9	15.8	16.0	1.3	72.5		0.2	60.0		254
TOTAL CASH COSTS/TON	4.6	12.6	0.3	7.7	4.5	4.6	0.4	20.7		0.1	17.1		73

U.C. COOPERATIVE EXTENSION

Table. 3 ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS.
SAN JOAQUIN VALLEY

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	- Non-Cash Over. -		- Cash Overhead -			Total
			Yrs Life	Depre- ciation	Interest	Insur- ance	Taxes	
90	130 hp 2wd Tractor	66000	10	5940.00	4356.00	181.50	363.00	10840.50
90	200 hp 4wd Tractor	94000	10	8460.00	6204.00	258.50	517.00	15439.50
90	80 hp 2wd Tractor	42000	10	3780.00	2772.00	115.50	231.00	6898.50
90	Border disc	1065	15	63.87	70.32	2.93	5.86	142.98
90	Chisel, heavy 11'	5300	15	318.00	349.80	14.58	29.15	711.53
90	Disc, finish, 21'	12500	15	750.00	825.00	34.38	68.75	1678.13
90	Disc, stubble, 16'	12500	15	750.00	825.00	34.38	68.75	1678.13
90	Ditcher, 5'	5300	15	318.00	349.80	14.58	29.15	711.53
90	Grain drill	8500	7	1092.86	561.00	23.38	46.75	1723.99
90	Rear blade, 3pt 8'	1900	15	114.00	125.40	5.22	10.45	255.07
90	Triplane, 16'	16000	15	960.00	1056.00	44.00	88.00	2148.00
TOTAL		265065		22546.73	17494.32	728.95	1457.86	42227.86
60% of New Cost *		159039		13528.04	10496.59	437.37	874.72	25336.72

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

ANNUAL INVESTMENT COSTS

Yr	Description	- Non-Cash Over. -		- Cash Overhead -			Repairs	Total	
		Price	Yrs Life	Depre- ciation	Interest	Insur- ance			Taxes
INVESTMENT									
	Buildings	75000	25	3000.00	4500.00	187.50	375.00	350.00	8412.50
	Fuel tanks & equip	7000	15	466.67	420.00	17.50	35.00	50.00	989.17
	Pickup, new	18000	7	2314.29	1188.00	49.50	99.00	200.00	3850.79
	Pickup, used	4000	5	720.00	264.00	11.00	22.00	200.00	1217.00
	Shop tools	12000	10	1080.00	792.00	33.00	66.00	100.00	2071.00
	Siphon tubes	1700	7	242.86	102.00	4.25	8.50	50.00	407.61
TOTAL INVESTMENT		117700		7823.82	7266.00	302.75	605.50	950.00	16948.07

Table. 3 continued

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	20.00	24000.00

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS

Table. 4 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	114	114	114	114	114	114	114
Harvest Cost	41	52	62	72	83	93	103
Interest on operating capital	6	6	6	6	6	6	6
TOTAL OPERATING COSTS/ACRE	161	172	182	192	203	213	223
TOTAL OPERATING COSTS/TON	80.70	68.69	60.68	54.96	50.67	47.33	44.66
CASH OVERHEAD COSTS/ACRE	61	61	61	61	61	61	61
TOTAL CASH COSTS/ACRE	223	233	243	254	264	274	285
TOTAL CASH COSTS/TON	111.43	93.27	81.16	72.52	66.03	60.99	56.95
NON-CASH OVERHEAD COSTS/ACRE	23	23	23	23	23	23	23
TOTAL COSTS/ACRE	246	256	266	277	287	297	308
TOTAL COSTS/TON	122.86	102.42	88.79	79.05	71.75	66.07	61.53

Table. 4

 U.C. COOPERATIVE EXTENSION
 RANGING ANALYSIS (Continued)

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR OAT HAY

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	2.0	2.5	3.0	3.5	4.0	4.5	5.0
50.00	-61	-47	-32	-17	-3	12	27
60.00	-41	-22	-2	18	37	57	77
70.00	-21	3	28	53	77	102	127
80.00	-1	28	58	88	117	147	177
90.00	19	53	88	123	157	192	227
100.00	39	78	118	158	197	237	277
110.00	59	103	148	193	237	282	327

NET RETURNS PER ACRE ABOVE CASH COSTS FOR OAT HAY

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	2.0	2.5	3.0	3.5	4.0	4.5	5.0
50.00	-123	-108	-93	-79	-64	-49	-35
60.00	-103	-83	-63	-44	-24	-4	15
70.00	-83	-58	-33	-9	16	41	65
80.00	-63	-33	-3	26	56	86	115
90.00	-43	-8	27	61	96	131	165
100.00	-23	17	57	96	136	176	215
110.00	-3	42	87	131	176	221	265

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR OAT HAY

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	2.0	2.5	3.0	3.5	4.0	4.5	5.0
50.00	-146	-131	-116	-102	-87	-72	-58
60.00	-126	-106	-86	-67	-47	-27	-8
70.00	-106	-81	-56	-32	-7	18	42
80.00	-86	-56	-26	3	33	63	92
90.00	-66	-31	4	38	73	108	142
100.00	-46	-6	34	73	113	153	192
110.00	-26	19	64	108	153	198	242

Table. 5

U.C. COOPERATIVE EXTENSION
COST 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	192	88	254	26	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	57706	26294	76143	7857	83003	997
TOTAL	84000	57706	26294	76143	7857	83003	997

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	54.96	72.52	79.05

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	3.2	3.5