

U.C. COOPERATIVE EXTENSION

SAMPLE COSTS AND ENERGY REQUIRED TO PRODUCE *BARLEY*

Under Dryland And Non Tillage Conditions

IN THE CENTRAL COAST - 1994

by

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Practices described in this study are based on those production procedures used by the growers surveyed in this study and represent practices used under growing conditions on the Central Coast. Sample costs given for labor, materials, equipment and contract services are based on growers' costs and 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 Cost* column is provided to enter your actual costs on **Tables 2 and 3, Costs Per Acre to Produce Barley and Costs And Returns Per Acre to Produce Barley**, respectively.

This study consists of General Assumptions for Producing Barley and eight tables and two charts.

Table 1.	Costs Per Acre To Produce Barley
Table 2.	Cost And Returns Per Acre To Produce Barley
Table 3.	Monthly Cash Costs Per Acre To Produce Barley
Table 4.	Whole Farm Annual Equipment, Investment And Business Overhead
Table 5.	Hourly Equipment Costs
Table 6.	Ranging Analysis
Table 7.	Cost And Returns / Breakeven Analysis

A companion study entitled, "Sample Costs and Energy Required to Produce Barley Under Dryland and Summer Fallow Conditions in the Central Coast - 1994" is available for those interested in conventionally tilled barley production or a comparison between the two systems.

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 the farm advisor in the county of interest.

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GENERAL ASSUMPTIONS FOR PRODUCING NO-TILL, DRYLAND BARLEY
Central Coast- 1994
U.C. Cooperative Extension

The following is a description of some general assumptions pertaining to sample costs of producing dryland barley using non-tillage practices on the Central Coast. The costs are based on cultural practices used by growers in this region. Some of the practices described may not be required or used during every production year while additional operations may be needed. Costs are represented on an annual, per acre basis.

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.

4. PRODUCTION CULTURAL PRACTICES:

Cultural practices for the production of no-till, dryland barley in the Central Coast vary somewhat from grower to grower. However, due to the small number of cultural operations used to produce barley in a non tillage cropping system, differences between grower practices are minor. These differences in cultural inputs can be caused by seasonal pest pressures, water availability and government regulations. The practices and inputs used in this cost study serve only as a typical guide based on actual grower practices.

Fertilization: Nitrogen is the primary nutrient needed by barley to insure adequate yields. While barley is responsive to nitrogen, timing the application with the proper fertilizer insures that the nitrogen will be available to the plant when needed. Aqua ammonia (20-0-0) is applied at a rate of 131.6 gallons of material per acre which is equivalent to 200 pounds of actual nitrogen per acre. The aqua is injected into the ground at planting during the month of January and is the only fertilizer application made.

Weed Control: Weed pressures vary each year, but those that cause problems for growers in this region continually consist of riggut brome (*Bromus diandrus*), wild oats (*Avena fatua*), and Russian thistle (*Salsola iberica*). Control of weeds is extremely important under dryland conditions due to soil water lost to weeds. With less water available to barley, yields can be drastically reduced. In conventionally tilled barley, cultivation and herbicides are both used to manage weeds. But by using discs or cultivators for this purpose soil moisture is lost, thus requiring a one or two year fallow period in the rotation to store enough water in the soil for a barley crop. Since mechanical cultivation is not an available practice in a non tillage system, a combination of chemicals and rotation are used to manage weeds in barley.

From November through December Roundup® is sprayed for control of weeds that have emerged after the first winter rains. The final herbicide application uses a combination of Glean® and 2,4-D for control of wild oats and various broadleaf's. This application is made in February through March. Roundup® is applied with the use of a ground sprayer and the combination of Glean® and 2,4-D is sprayed by aircraft.

Planting: With so few field operations dryland, non tillage barley in the Central Coast, planting is a crucial operation that requires specialized equipment. With very large acreage of grains to plant in a limited amount of time, growers use large horsepower (Hp) tractors which pull a no-till drill. This type of drill is characterized by coulters that cut a slot in front of seed openers, tanks or hoppers that carry liquid or dry fertilizers, and are large and heavy. All of these factors allow the drill to perform several cultural tasks in one pass across the field, thus reducing energy

needed and costs. When the coulters slice the soil before the seed openers, they till the soil slightly, performing the task of a disc or field cultivator. This reduces the energy needed to attain the proper planting depth by the seed openers. With fertilizer carriers attached to the drill, a separate operation of applying fertilizer is also eliminated. The size and weight are important for planting large acreage efficiently and so the coulters and openers can penetrate the untilled ground. Because of the weight and size and the fact that many of these fields are on slopes, tractors in the 200 to 360 Hp range are needed.

Farmers growing barley under dryland conditions seed in the range of 70 to 90 pounds per acre. In this study a seeding rate of 80 pounds of barley per acre is used.

Residue Management: Increasing surface residue is the most important consequence of using a non tillage system. By using a no-till drill to accomplish all of the cultivation and planting operations, standing stubble is left which improves water infiltration, increases organic matter in soils, and reduces soil lost through erosion. These physical factors lead to reductions in energy and costs required to grow a barley crop under these conditions.

The pesticides, rates, and cultural practices mentioned in this cost study are a few of those that are listed in the UC IPM Small Grains Pest Management Guidelines and Integrated Pest Management For Small Grains. Written recommendations are required for many pesticides and are made by licensed pest control advisors. For information and pesticide use permits, contact the local county Agricultural Commissioner's office. Contact your local farm advisor for advice on production practices.

6. **GROWER COMMENTS:**

All of the growers interviewed expressed many similar views on the benefits and deficiencies of a non tillage barley production. One of the most emphasized points made by all of the growers was that this type of cropping system increased the amount of water that infiltrates the surface and is held in the soil profile. This has allowed most of them to grow crops on an annual basis. The advantage to not having to leave fields fallow for one to two years following a crop is that a return is realized annually. While yields are usually lower in a annual rotation system the fact of having income every year as opposed to every second or third year allows the growers to economically sustain their farms. They also felt that during the drought what rain they did receive was capture and held in the soil which allowed them to grow barley, even though they yielded less barley. Conventionally tilled fields, they said, lost rain through runoffs allowing very little moisture retention and causing the fields to remain fallow longer.

Erosion control is another benefit of no-till barley and is the primary reason for many government programs available to the growers. Almost all of the land farmed in this region is classified as highly erodible by the SCS (Soil Conservation Service). Yet all of the farmers in this study said they had either none or very little erosion problems. One grower stated that while he had very minor erosion troubles, neighbors on identical land had “ditches in his fields that are big enough to lose a harvester in”.

Those growers that have the right conditions to utilize an annual cropping system have found better success in controlling weeds when they are able to rotate fields to a different crop each year rather than leave them fallow and control them with herbicides exclusively. Although rotation manages many weeds, herbicides important for control. Growers expressed that substituting herbicides for discing or cultivation increased speed over the fields and reduced machinery and labor costs. The biggest problem that growers saw with the switch from mechanical to chemical control was the relatively few materials that will control certain weeds. No available herbicides can provide control for Russian thistle which is a problem.

All of the growers participate in several government farm programs. These include acreage set asides, ACP, CRP and private land hunting programs. Which programs were used depend on the situation of each of the growers. See the Government Programs section for a better description or contact your local ASCS or SCS office.

Grazing was also mentioned by most of the growers as an enterprise that many of them operate and it has benefited by the switch from conventional tillage to a no-till system. Significantly higher amounts of stubble in the fields and less acres left fallow increase the number of cattle the land can carry. In the lower rainfall areas in this region, lower amounts of stubble are attained and grazing it with cattle can put the land into non-compliance with the conservation program they are under by leaving less than the allowable surface residue needed for proper erosion control. The one grower who does not raise cattle said that the increased stubble has improved the forage for wildlife which helps their private hunting program.

As many advantages provided by a non tillage cropping system, growers voiced certain disadvantages. Machinery has made no-till systems possible, specifically the no-till drill. Yet much of this type of equipment is very expensive, requiring large capital investments. Since no-till drills are designed to make an opening in untilled soil, a great amount of weight is required to force the coulters into the ground. Seeding with a fully loaded no-till drill on hillsides slows the time in which an acre can be planted and increases the size of tractor needed to pull it. When a limited planting window is available, slower planting time can increase a growers risk for failing to drill all of the acreage.

7. HARVEST AND TRANSPORTATION:

Harvest: Growers in the Central Coast own their harvest equipment. This compliment of equipment consists of combines, truck-tractors, and several grain trailers. The combines are specifically designed for hillside use. This design lets the grain platform (or header) and chassis run at the same slope as the hill while the cab and grain bin remain upright. To harvest the grain in a timely manner, 20 foot headers are used. Truck-tractors are employed to haul empty grain trailers along side the combines so harvested grain can be loaded into them. Full trailers are hauled from the fields to either on farm storage facilities or to market were it is sold.

Transportation: Growers own trucks and trailers and usually haul their grain to market themselves. The other option is to have the barley hauled by a contract hauling company. In either situation growers bear the cost of transportation. Two transportation rates are normally charged. This reflects grain hauled from the field or from grower storage. Typical hauling charges might be \$8 per ton hauled from on-farm storage and \$10 per ton to haul grain from the field. Transportation rates used in this study are \$2 per ton for hauling from the field to farm storage and \$8 per ton for transporting from the farm to market.

Equipment for harvest operations are inventoried in investment costs on **Table 4**, and labor, fuel, repairs, depreciation, and operating interest, are calculated as harvest costs in **Table 1**. If a grower contracts his harvest operation all harvesting equipment should be removed from investment costs in **Table 4**, its appropriate cost should be subtracted from harvest costs in **Table 1** and a custom charge would then be added.

8. YIELDS & RETURNS:

Yields: The yield for barley grown in the Central Coast that is used in this study is one ton per acre. Yield variations often occur due to the many environmental factors that can affect dryland farming. During the drought years barley produced only half of a normal crop.

Returns: An estimated price of a \$113.50 per ton of grain is used to calculate returns. The return price is an average based on the previous five years and is shown in **Table 2**.

This study does not include any income from any of the government programs. However, federal farm programs can play an important roll in dryland barley production and require consideration by individual growers and landowners. A number of programs do exist that can provide support to growers farming on highly erodable land. These include the Conservation Reserve Program (CRP) and Agricultural Conservation Program (ACP). Growers should contact a local Agriculture Stabilization and Conservation Service (ASCS) and Soil Conservation Service (SCS) to determine how best to use these services. Returns, as shown in **Table 7**, will vary and the yields and prices used in this cost study is, at best, an estimate taking into consideration current situations.

9. RISK:

Risk is caused by various sources of uncertainty which include production, price, technology, actions of others and incapacitation of the farm operator. Examples of these are disease damage, a decrease in price, planting a new, higher yielding variety, an increase in land rental rates, and illness of the manager. The risks associated with producing barley in the Central Coast under non tillage, dryland conditions 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 barley production. Growers should consider all of the agronomic and economic risks before committing resources to barley production in the Central Coast.

10. LABOR:

Hourly wages for workers is \$5.75 per hour for both machine and non-machine workers. This is based on wages paid by the growers in this study. Adding 34% for Workers Compensation, Social Security, Medicare, insurance, and other possible benefits gives the labor rates shown of \$7.71 per hour for both machine labor and non-machine labor. Almost all of the growers supplied health insurance, housing and a truck in their benefits package. Some of the labor supplied to the farms is from family members, but they are still paid the same rate in this study. Labor for operations involving machinery are 20% higher than the operation time given in **Table 1** to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and repair. Wages for management is not included as a cash cost. Any return above total costs is considered a return to management and risk.

11. CASH OVERHEAD:

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, and equipment repairs. Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 7.89% per year. A nominal interest rate is the going market cost of borrowed funds.

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. County taxes are calculated as 1% of the average value of the property for this study. Average value equals new cost plus salvage value divided by 2 on a per acre basis.

Insurance for farm investments vary depending on the assets covered and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.713% of

the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$514 for the entire farm or \$1.07 per acre. Office and business expenses are estimated at \$20 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc. Cash overhead costs are found in Tables 1, 2, 3, and 4.

12. NON-CASH OVERHEAD:

Non-cash overhead is comprised of depreciation and interest charged on equipment and other investments. Most of the equipment inventory on typical alfalfa farms in the Intermountain Region is purchased used. This study shows current purchase price for new equipment adjusted to 50% of new value to indicate a mix of new and used equipment. Annual equipment and investments costs are shown in Tables 1, 2, and 4. They represent depreciation and opportunity cost for each investment on an annual per acre basis.

Depreciation is a reduction in market value of investments due to wear, obsolescence, and age, and is on a straight line basis. Annual depreciation is calculated as purchase price minus salvage value divided by years the investment is held. The purchase price and years of life are shown in Table 4.

Interest is charged on investments to account for income foregone (opportunity cost) that could be received from an alternative investment. The investments are assumed to be owned outright. Therefore, interest on investments is a non-cash cost. Investments include land, alfalfa stand establishment, buildings, and equipment. Interest is calculated as the average value of the investment during its useful life, multiplied by 4.2% per year. Average value for equipment and buildings equals new cost plus salvage value divided by 2 on a per acre basis. The average value for land is equal to the purchase price because land does not depreciate. The interest rate used to calculate opportunity cost is estimated as a ten year average of the agricultural sectorwide longrun rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can be used effectively only in the agricultural sector.

13. EQUIPMENT CASH COSTS:

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 fuel, lubrication, and repairs.

In allocating the equipment costs on a per acre basis, the following hourly charges are calculated first and shown in Table 8. 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 PTO hp, and type of fuel used. The fuel and repair cost per acre for each operation in Tables 1 and 4 is determined by multiplying the total hourly operating cost in Table 8 for each piece of equipment used for the cultural practice by the number of hours per acre for that operation. Tractor time is 10% higher than implement time for a given operation to account for setup time. Prices for on-farm delivery of diesel and gasoline are \$0.85 and \$1.17 per gallon, respectively.

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Table 1.

U.C. COOPERATIVE EXTENSION
 COSTS PER ACRE TO PRODUCE DRYLAND BARLEY
 NO-TILL
 CENTRAL COAST - 1993

Labor Rate: \$7.71/hr. machine labor

Interest Rate: 4.00%
Yield per Acre: 1.00 Ton

Operation	Operation Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Cash and Labor Material Cost	Costs per Acre Custom/Rent	Total Cost	Your Cost
Cultural:							
Apply Herbicide	0.03	0.23	0.73	6.23	5.00	12.19	
Plant	0.18	1.68	14.11	22.00	0.00	37.80	
Pickup Truck Use	0.08	0.74	0.55	0.00	0.00	1.30	
TOTAL CULTURAL COSTS	0.29	2.66	15.39	28.23	5.00	51.29	
Harvest:							
Harvest	0.19	1.74	6.32	0.00	0.00	8.05	
Haul From Field To Storage	0.00	0.00	0.00	0.00	2.00	2.00	
Haul to Market	0.00	0.00	0.00	0.00	8.00	8.00	
TOTAL HARVEST COSTS	0.19	1.74	6.32	0.00	10.00	18.05	
Interest on operating capital @ 4.00%						1.26	
TOTAL OPERATING COSTS/ACRE		4.40	21.71	28.23	15.00	70.60	
TOTAL OPERATING COSTS/TON						70.60	
CASH OVERHEAD:							
Office Expense						5.00	
Share Rent @ 15%						17.02	
Property Taxes						0.91	
Property Insurance						0.46	
Investment Repairs						0.05	
TOTAL CASH OVERHEAD COSTS						23.44	
TOTAL CASH COSTS/ACRE						94.04	
TOTAL CASH COSTS/TON						94.04	
NON-CASH OVERHEAD:							
Investment	Per producing Acre	Depreciation	Annual Cost	Interest @ 9.00%			
Shop Buildings	10.29	0.51	0.46	0.46	0.98		
Shop Tools	1.55	0.14	0.08	0.08	0.22		
Grain Storage	7.44	0.37	0.33	0.33	0.71		
Fertilizer Tanks	3.90	0.18	0.19	0.19	0.37		
Fuel Tanks	7.97	0.40	0.36	0.36	0.76		
Equipment	137.17	15.67	6.79	6.79	22.46		
TOTAL NON-CASH OVERHEAD COSTS	168.32	17.27	8.22		25.49		
TOTAL COSTS/ACRE						119.53	
TOTAL COSTS/TON						119.53	

Table 2.

U.C. COOPERATIVE EXTENSION
 COSTS AND RETURNS PER ACRE TO PRODUCE DRYLAND BARLEY
 NO-TILL
 CENTRAL COAST - 1993

Labor Rate: \$7.71/hr. machine labor

Interest Rate: 4.00%

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
=====					
GROSS RETURNS					
Barley	1.00	Ton	113.50	113.50	
TOTAL GROSS RETURNS FOR BARLEY				113.50	

OPERATING COSTS					
Herbicide:					
Roundup	0.75	Pint	5.41	4.06	
2,4-D	1.00	Pint	1.88	1.88	
Glean DF	0.17	Oz	1.74	0.30	
Seed:					
Barley Seed	80.00	Lb	0.20	16.00	
Fertilizer:					
Aqua Ammonia	200.00	Lb	0.03	6.00	
Custom:					
Air Application - Herb.	1.00	Appl	5.00	5.00	
Haul Grain	2.00	Ton	2.00	10.00	
Labor (machine)	0.57	hrs	7.71	4.40	
Labor (non-machine)	0.00	hrs	0.00	0.00	
Fuel - Gas	0.30	gal	1.05	0.32	
Fuel - Diesel	7.58	gal	0.74	5.61	
Lube				0.89	
Machinery repair				14.90	
Interest on operating capital @ 4.00%				1.26	
TOTAL OPERATING COSTS/ACRE				70.60	
TOTAL OPERATING COSTS/TON				70.60	

NET RETURNS ABOVE OPERATING COSTS				42.90	

CASH OVERHEAD COSTS:					
Office Expense				5.00	
Share Rent @ 15%				17.02	
Property Taxes				0.91	
Property Insurance				0.46	
Investment Repairs				0.05	
TOTAL CASH OVERHEAD COSTS/ACRE				23.44	

TOTAL CASH COSTS/ACRE				94.04	
TOTAL CASH COSTS/TON				94.04	

NON-CASH OVERHEAD COSTS (DEPRECIATION & INTEREST):					
Shop Buildings				0.98	
Shop Tools				0.22	
Grain Storage				0.71	
Fertilizer Tanks				0.37	
Fuel Tanks				0.76	
Equipment				22.46	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				25.49	

TOTAL COSTS/ACRE				119.53	
TOTAL COSTS/TON				119.53	

NET RETURNS ABOVE TOTAL COSTS				-6.03	
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Table 3.

U.C. COOPERATIVE EXTENSION
 MONTHLY CASH COSTS PER ACRE TO PRODUCE DRYLAND BARLEY
 NO-TILL
 CENTRAL COAST - 1993

Beginning NOV 92	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	TOTAL
Ending OCT 93	92	92	93	93	93	93	93	93	93	93	93	93	
Cultural:													
Apply Herbicide	6.90				5.30								12.19
Plant			37.80										37.80
Pickup Truck Use	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14				1.30
TOTAL CULTURAL COSTS	7.04	0.14	37.94	0.14	5.44	0.14	0.14	0.14	0.14				51.29
Harvest:													
Harvest									8.05				8.05
Haul From Field To Storage									2.00				2.00
Haul to Market									8.00				8.00
TOTAL HARVEST COSTS									18.05				18.05
Interest on oper. capital	0.02	0.02	0.15	0.15	0.17	0.17	0.17	0.17	0.23				1.26
TOTAL OPERATING COSTS/ACRE	7.06	0.17	38.09	0.29	5.61	0.31	0.31	0.31	18.43				70.60
TOTAL OPERATING COSTS/TON	7.06	0.17	38.09	0.29	5.61	0.31	0.31	0.31	18.43				70.60
OVERHEAD:													
Office Expense	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56				5.00
Share Rent @ 15%									17.02				17.02
Property Taxes			0.46						0.46				0.91
Property Insurance			0.23						0.23				0.46
Investment Repairs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
TOTAL CASH OVERHEAD COSTS	0.56	0.56	1.24	0.56	0.56	0.56	0.56	0.56	18.26	0.00	0.00	0.00	23.44
TOTAL CASH COSTS/ACRE	7.62	0.73	39.34	0.85	6.17	0.87	0.87	0.87	36.69	0.00	0.00	0.00	94.04
TOTAL CASH COSTS/TON	7.62	0.73	39.34	0.85	6.17	0.87	0.87	0.87	36.69	0.00	0.00	0.00	94.04

Table 4.

U.C. COOPERATIVE EXTENSION
WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
CENTRAL COAST - 1993

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	- Non-Cash Over. Depre- ciation	Interest	- Cash Overhead - Insur- ance	Taxes	Total
93	360 HP 4WD Tractor	149028	12	11177.00	7376.90	409.83	819.66	19783.39
93	Combine - 20' Header	156238	10	14061.40	7733.79	429.65	859.31	23084.15
93	Drill - No-till 15'	157135	6	23570.10	7778.20	432.12	864.24	32644.66
93	Pickup Truck - 1/2 Ton	17240	7	2216.57	853.38	47.41	94.82	3212.18
93	Pickup Truck - 3/4 Ton	21759	7	2797.57	1077.08	59.84	119.68	4054.17
93	Sprayer - 1000 Gal	12301	10	1107.10	608.90	33.83	67.66	1817.49
TOTAL		513701		54929.74	25428.25	1412.68	2825.37	84596.04
40% of New Cost *		205480		21971.90	10171.30	565.07	1130.15	33838.42

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

ANNUAL INVESTMENT COSTS

Yr	Description	Price	Yrs Life	- Non-Cash Over. Depre- ciation	Interest	- Cash Overhead - Insur- ance	Taxes	Repairs	Total
INVESTMENT									
	Fertilizer Tanks	27682	20	1245.70	1370.25	76.12	152.25	15.00	2859.32
	Fuel Tanks	56620	20	2831.00	2547.90	141.55	283.10	50.00	5853.55
	Grain Storage	52800	20	2640.00	2376.00	132.00	264.00	100.00	5512.00
	Shop Buildings	73032	20	3651.60	3286.44	182.58	365.16	75.00	7560.78
	Shop Tools	11000	10	990.00	544.50	30.25	60.50	100.00	1725.25
TOTAL INVESTMENT		221134		11358.30	10125.09	562.50	1125.01	340.00	23510.90

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Office Expense	7100.00	Acre	5.00	35500.00
Share Rent @ 15%	857.00	Acre	17.02	14586.14

Table 5.

U.C. COOPERATIVE EXTENSION
HOURLY EQUIPMENT COSTS
CENTRAL COAST - 1993

Yr	Description	Actual Hours Used	-Non-Cash Over. Depre- ciation	Interest	- Cash Overhead - Insur- ance	Taxes	Repairs	Operating Fuel & Lube	Total Oper.	Total Costs/Hr.
93	360 HP 4WD Tractor	999.1	4.47	2.95	0.16	0.33	4.97	17.78	22.75	30.67
93	Combine - 20' Header	199.2	28.23	15.53	0.86	1.73	18.93	11.61	30.54	76.88
93	Drill - No-till 15'	200.0	47.15	15.56	0.86	1.73	52.52	0.00	52.52	117.82
93	Pickup Truck - 1/2 Ton	284.4	3.12	1.20	0.07	0.13	2.09	4.53	6.62	11.14
93	Pickup Truck - 3/4 Ton	284.4	3.93	1.51	0.08	0.17	2.63	4.53	7.16	12.86
93	Sprayer - 1000 Gal	119.4	3.71	2.04	0.11	0.23	4.11	0.00	4.11	10.20

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
CENTRAL COAST - 1993

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE DRYLAND BARLEY - NO-TILL

	YIELD (TON/ACRE)						
	0.70	0.80	0.90	1.00	1.10	1.20	1.30
OPERATING COSTS/ACRE:							
Cultural Cost	51	51	51	51	51	51	51
Harvest Cost	13	14	16	18	20	22	23
Interest on operating capital	1	1	1	1	1	1	1
TOTAL OPERATING COSTS/ACRE	65	67	69	71	72	74	76
TOTAL OPERATING COSTS/TON	93.09	83.72	76.43	70.60	65.83	61.85	58.49
CASH OVERHEAD COSTS/ACRE	23	23	23	23	23	23	23
TOTAL CASH COSTS/ACRE	89	90	92	94	96	98	99
TOTAL CASH COSTS/TON	126.54	113.00	102.46	94.04	87.14	81.39	76.53
NON-CASH OVERHEAD COSTS/ACRE	25	25	25	25	26	26	26
TOTAL COSTS/ACRE	114	116	118	120	121	123	125
TOTAL COSTS/TON	162.32	144.53	130.65	119.53	110.40	102.79	96.33

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR DRYLAND BARLEY - NO-TILL

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	0.70	0.80	0.90	1.00	1.10	1.20	1.30
100.00	5	13	21	29	38	46	54
105.00	8	17	26	34	43	52	60
110.00	12	21	30	39	49	58	67
113.50	14	24	33	43	52	62	72
120.00	19	29	39	49	60	70	80
125.00	22	33	44	54	65	76	86
130.00	26	37	48	59	71	82	93

NET RETURNS PER ACRE ABOVE CASH COSTS FOR DRYLAND BARLEY - NO-TILL

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	0.70	0.80	0.90	1.00	1.10	1.20	1.30
100.00	-19	-10	-2	6	14	22	31
105.00	-15	-6	2	11	20	28	37
110.00	-12	-2	7	16	25	34	44
113.50	-9	0	10	19	29	39	48
120.00	-5	6	16	26	36	46	57
125.00	-1	10	20	31	42	52	63
130.00	2	14	25	36	47	58	70

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR DRYLAND BARLEY - NO-TILL

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE)						
	0.70	0.80	0.90	1.00	1.10	1.20	1.30
100.00	-44	-36	-28	-20	-11	-3	5
105.00	-40	-32	-23	-15	-6	3	11
110.00	-37	-28	-19	-10	0	9	18
113.50	-34	-25	-15	-6	3	13	22
120.00	-30	-20	-10	0	11	21	31
125.00	-26	-16	-5	5	16	27	37
130.00	-23	-12	-1	10	22	33	44

U.C. COOPERATIVE EXTENSION

Farming System: **Non Tillage**
Crop: **Barley - Dryland**
Year: **1993**

Operating Input	Quantity/Acre	Unit	kcal/Acre
Seed			
Barley	80	Lb	265,440
Fertilizer			
Aqua Ammonia	40	Lb of N	2,364
Herbicide			
Weedar 64A	0.1250	Gal	4,990
Glean DF	0.0013	Gal	68
Roundup	0.0938	Gal	3,134
Custom/Contract/Rental			
Air Application	1	Ac	7,355
Haul	2000	Lb	201,600
Gasoline			
Gasoline	0.3	Gal	9,287
Diesel			
Diesel	7.58	Gal	272,531
Machinery			
Total Equipment			11,285
Investments			
Buildings			3,011
Grain Storage			150
Fuel Tanks			2,450
Shop Tools			392
Fertilizer Tanks			4
Labor			
	0.57	Hours	
TOTAL INPUT		kcal	784,062
OUTPUT			
Barley Yield	2000	Lb	3,161,818
EFFICIENCY			
kcal output/kcal input ratio			4.03
kcal output/labor hour ratio			5,547,049.44