1994

U.C. COOPERATIVE EXTENSION

SAMPLE COSTS PRODUCE

~BARLEY~

Under Dryland And No-till Conditions
IN THE CENTRAL COAST

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GENERAL INFORMATION FOR PRODUCING BARLEY *Under Dryland And No-till Conditions* In The Central Coast - 1994

The detailed costs for barley production in the Central Coast are presented in this study. The hypothetical farm used in this report is based on a survey of selected grower practicing these techniques and consists of 7,100 acres of which 1000 acres are in no-till barley production.

Practices described in this study are based on those production procedures used by 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, Two Year Summer Fallow Rotation
Table 4. Whole Farm Annual Equipment, Investment And Business Overhead
Table 5. Hourly Equipment Costs
Table 6. Ranging Analysis
Table 7. Monthly Cash Costs Per Acre To Produce Barley, Annual Rotation

A companion study entitled, " Sample Costs to Produce Barley Under Dryland and Conventional Tillage Conditions in the Central Coast - 1994" is available for those interested in conventionally tilled barley production or a comparison between the two systems. Also available are two dryland barley cost studies entitled, "Sample Costs to Produce Wheat Under Dryland and Conventional Tillage Conditions in Yolo County - 1994" and "Sample Costs to Produce Wheat Under Dryland and No-till Conditions Yolo County - 1994". These and other cost of production studies can be obtained by calling (530) 752-2745 or 3589.

For an explanation of calculations used for the study refer to the attached General Assumptions or call the Department of Agricultural and Resource Economics, Cooperative Extension, University of California, Davis, California, (530) 752-3589 or the San Luis Obispo County farm advisor.

U.C. COOPERATIVE EXTENSION

GENERAL ASSUMPTIONS FOR PRODUCING BARLEY Under Dryland and No-till Conditions In The Central Coast - 1994

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. Practices described should not be considered recommendations by the University of California, but represent production procedures considered typical for this crop and area. Some of these costs and practices may not be applicable to your situation nor used during every production year. Additional ones not indicated may be needed. Cultural practices for barley production vary by grower and region. Variations can be significant. Practices and inputs used in this cost study serve only as a sample or guide. These costs are represented on an annual, per acre basis. *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.*

1. LAND, CLIMATE, AND ROTATION:

Land: Areas that produce dryland barley in the Central Coast are mostly located inland from the coast, east of the Santa Lucia Mountain and the Sierra Madre Mountain ranges. This region lies within of most of the southern drainage of the Salinas River and the Carrizo Plains.

The site for the farm in this study is characterized by moderate to highly erodable, uneven terrain of hilltops, hillsides, plateaus, and plains; also characteristic of these farms is the large size. Growers interviewed had farms ranging from 3,600 to 64,000 acres, some of which is owned and some leased. The farm for this study consists of 7,100 acres of land of which 1,000 acres are in actual no-till, dryland barley production

Climate: Along with soil and topography, rainfall is another important factor affecting which crops can be successfully grown. Average annual rainfall for this region vary from 9.5 inches to 12 inches, most of which comes in the winter months. Historically temperature have ranged from 0_ F to 117_ with the extremes, again, occurring in the winter and summer. Growers plan their cropping system around these conditions in order to take advantage of the best possible growing conditions for dryland barley.

Rotation: Depending on the number of fallow years in a rotation and how the fallow is utilized, i.e. grazing, little or no income may be generated for one or more years. Rotation can have a beneficial effect on controlling weeds and other pests. Weeds that are not controlled by herbicides are usually managed by rotating into other crops, fallowing the land, and/or cultivation. Other commodities produced and uses for the same acreage in rotation with barley might include safflower, vetch, wheat, hay, and grazing for livestock.

Growers in this region use several different rotation patterns depending on their individual situation. Annual rainfall, when it occurs, and weed pressures are probably the most important agronomic factors influencing crop rotation. Dryland barley is very dependent on the amount of rain and how well it is stored in the soil profile. Low precipitation or weed infestations that use up stored water may cause growers to use a rotation pattern different from the two year rotation described in this report; grain - summer fallow - grain rotation. Grazing livestock, if it occurs, would take place during the summer months only. Examples of different rotations for dryland barley found in the Central Coast region may include, but are not limited to those shown in Table A.

Table A. DRYLAND BARLEY ROTATION PATTERNS FOR CENTRAL COAST REGION

ROTATION	YEAR 1	YEAR 2	YEAR 3	YEAR 4
Annual	Barley	Legume	Barley	Legume
2-Yr (Summer Fallow)	Barley	Summer Fallow	Barley	Summer Fallow
3-Yr (Summer Fallow)	Barley	Pasture (Graze)	Summer Fallow	Barley

An annual rotation shown in Table A is being used successfully by some growers under a non tillage system. The limiting factor with this system are weeds that cannot be controlled within the second year. The 2-year rotation is similar to the annual system in that it is only out of barley for one year. However, the field is fallowed in the second year using herbicides to manage weeds. This does not allow any cash crop to be grown which reduces the average annual return to the system. This system does allow more flexibility in controlling weeds that are a problem during the barley year. The 3-year rotation includes a pasture of resident vegetation utilized for grazing livestock following barley. After the pasture year a summer fallow period begins where weeds are controlled with chemicals before barley is planted again in the fall. Advantages to this system is that a longer period of time allows for better control of weeds and additional revenues are realized by utilizing stubble and pasture for livestock feed. The main disadvantage is that the fallow year does provide any income over the rotation period.

2. RENTAL AGREEMENT:

Growers in the Central Coast both own and lease land for barley production Leases are charged as a per acre cash rent or a share rent on gross returns or yields. Cash rental for barley ground typically runs around $15 per acre. Share rents on the other hand can be a straight percentage of gross returns or they can be on a sliding scale with the percentage dependent on yield. Share rents might normally range between 10 to 25%. The land in this study is leased on a share rent basis at 15% of gross returns per acre.

3. GOVERNMENT PROGRAMS:

Several Federal conservation and crop support programs are used by growers of producing dryland barley on highly erodable land (HEL). A complete discussion of each of the programs can not be accomplished in this study; it is only meant to briefly describe certain points pertinent to the barley enterprise described here. Contact local Agricultural Stabilization and Conservation Service (ASCS) and Soil Conservation Service (SCS) for further information.

Both ASCS and SCS are Federal agencies which provide expertise for managing various crop and conservation programs at the local level. All of the programs are administered by the ASCS, which handles applications and dispenses moneys. Technical and educational help for the conservation programs, such as measuring crop residue, is performed by the SCS. Management of program activities in counties are mandated to farmer-elected county committees. They provide the overall direction and guidance for planning and coordinating their district's programs. County committees are also responsible for choosing which cultural practices are allowable for growers to use in order to maintain program compliance. These practices are drawn from a national list of acceptable conservation practices.

Conservation Compliance Plan: All land classified as HEL is required to have and maintain a Conservation Compliance Plan (CCP). A CCP is not a separate program, but a guide for the grower to meet individual conservation program requirements on their HEL. CCPs are designed by the grower and approved by the county committee. It is intended to discourage crop and livestock production on unprotected, HEL. Failure to institute a CCP on designated HEL results in a growers ineligibility to participate in farm support programs.

Agricultural Conservation Program: Growers wishing to produce crops on HEL can do so under the Agricultural Conservation Program (ACP). It is intended to provide cost sharing so that growers can use conservation measures they might not perform without financial assistance. By providing financial support on a maximum of 75% of the program acreage for three to ten years, growers can transition to a production system that conserves soil and water. The program must be renewed each year. Livestock grazing is allowed under the ACP, but at least 70% plant residue must be left on the surface once the rainy season begins. Grazing lets growers utilize some of the barley stubble and reduce feed expenditures for livestock.

Conservation Reserve Program: The Conservation Reserve Program (CRP) does not allow the designated land be used for crop production. It's purpose is to place HEL in reserve and to convert it to permanent vegetation or trees (non-crop) in order to enhance wildlife and environmental resources. This means growers are actually reducing productive crop acreage though it is more likely marginally, if at all, profitable. In return the grower receives a payment for acreage put in reserve. By removing this land from production growers reduce total energy requirements and cash expenditures while still receiving a return from the land. CRPs require that the land have either permanent cover, trees or both established and maintained for 10 years. Noxious weeds must be controlled and no grazing is allowed. Early withdrawal from the program results in severe penalties.

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. Variations 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 and phosphorus are the major nutrients required by barley on the Central Coast to insure adequate yields. Aqua ammonia (20-0-0) is commonly used to fertilize barley, though a number of other formulations containing nitrogen may also be used. Aqua ammonia is usually injected during the last tillage operation prior to planting. "Starter" fertilizers, consisting of small amounts of N and up to 30 pounds per acre of P, are often applied during planting, which occurs between November and early January. Fertilizer application rates on the Central Coast consist of 40-60 pounds per acre of N and 20-30 pounds per acre of P. While applying all of the fertilizer prior to or at planting, it is also common for or some topdressing of nitrogen to occur in most years. In this study aqua ammonia (20-0-0) is applied at a rate of 60 pounds of actual nitrogen per acre at planting during January and is the only fertilizer application made.

Weed Control: Weed pressures vary each year, but the most common and troublesome weeds in this region consist of wild mustard (*Brassica sp.*), wild radish (*Raphanus sativus* L.), coast fiddleneck (*Amsinka intermedia*), shepardspurse (*Capsella bursa-pastoris* L.), miner's lettuce (*Montia perfoliata*), ripgut brome (*Bromus diandrus*), wild oats (*Avena fatua* and *Avena barbata*), and Russian thistle (*Salsola iberica*). Control of weeds is extremely important under dryland cultural conditions because of significant yield reductions due to weed competition for water and nutrients.

In conventionally tilled barley, both cultivation and herbicides are both used to manage weeds. However, the use of tillage for weed control during fallow years causes loss of soil moisture to the depth of tillage. Since mechanical cultivation is not used in non tillage systems, a combination of chemicals and rotation are used to manage weeds in barley. Herbicides are applied, either by air or with ground sprayers, early in the crop year (mid-January through mid-March) to control both broadleaf weeds and wild oat; ripgut brome can only be controlled before planting using tillage of preplant applications of

Roundup–. Glean–, 2,4-D, and Buctril– are the most common herbicides used to control broadleaf weeds, including russian thistle. Wild oat is controlled through the use of Avenge– at the three to five leaf growth stage. As mentioned above, only Roundup– is used to kill ripgut brome; applications of Avenge– for wild oat can retard growth of ripgut brome.

From November through December, in this study, 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 oat and various broadleaf weeds. 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: Planting without the soil loosening affects of tillage requires specialized equipment. With very large acreage of grain to plant in a limited amount of time, growers utilize large no-till drills pulled by large horsepower (Hp) tractors. This type of drill is characterized by coulters or knives that cut a slot in front of seed openers, tanks or hoppers that carry liquid or dry fertilizers. All of these factors allow the drill to perform several cultural tasks in one pass, thus reducing energy needed and costs. When coulters slice the soil before the seed openers, they till the soil slightly, performing the task of a disc or field cultivator. This reduces energy needed to attain the proper planting depth. With fertilizer carriers attached to the drill, a separate operation of applying fertilizer can also be eliminated. Size and weight are important for planting large acreage efficiently and so coulters and openers can penetrate untilled ground. Because of the weight and size of the planting equipment and the fact that many of these fields are on slopes, tractors in the 200 to 360 Hp range are used.

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. As mentioned in the Fertilizer section, aqua ammonia is also applied at planting.

Residue Management: Increasing surface residue is one of the most important consequence of using a no-till system. By using a no-till drill to accomplish all cultivation and planting operations, stubble is left standing 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.

5. GROWER COMMENTS:

The growers surveyed for this report provided not only information on production practices, but also commented on their experiences and observations for growing dryland barley. These are presented here. Growers interviewed expressed many similar views on the benefits and deficiencies of no-till barley production. One of the most emphasized points made by the growers was that this type of cropping system increased the amount of water that infiltrates and is held in the soil profile. This has allowed some of them to grow crops on an annual basis on some fields. The advantage to not having to leave fields fallow for one to two years following a crop is that a return is realized annually for the farm's entire production acreage. While yields are usually lower in a annual rotation system the fact of having income every year from each acre 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 was received was capture and held in the soil which allowed them to grow barley, even though yields were reduced.

Conventionally tilled fields, they said, lost rain through runoff 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. A large portion of land farmed in this region is classified as highly erodable by the SCS. 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 to a different crop each year rather than leave them fallow and control them with herbicides exclusively. Although rotation manages many weeds, herbicides are important for control. 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 ripgut brome or zorro fescue which are problems.

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 growers as an enterprise many of them operate and has benefited by the switch from conventional tillage to a no-till system. Significantly higher amounts of stubble per acre and less acres left fallow increase the carrying capacity. In the lower rainfall areas in this region, lower amounts of stubble are attained and grazing can put the land into non-compliance with conservation programs 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 forage for wildlife which helps their private hunting program.

In addition to the several advantages provided by a non tillage cropping system, growers described certain disadvantages. No-till drills can be 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. When a limited planting window is available, slower planting time can increase a growers risk for failing to drill all of the acreage. Growers said that substituting herbicides for tillage increased speed over fields and reduced machinery and labor costs.

6. HARVEST AND TRANSPORTATION:

Harvest: Growers in the Central Coast generally 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 in this study. 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.

7. YIELDS & RETURNS:

Yields: Yields for barley grown in the Central Coast used in this study is one ton per acre. Yield variations often occur due to many environmental factors that can affect dryland farming. During the drought years barley may produce 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; the profit/loss shown in Table 6 indicates how important federal farm programs are in dryland wheat production and require consideration by individual growers and landowners. Actual receipts from programs may vary, but growers should take into consideration additional returns in order to properly determine what their potential return might be. Growers should contact a local ASCS and 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 are, at best, estimates taking into consideration current situations.

8. RISK:

Risk is caused by various sources of uncertainty which include production, price, and financial. Examples of these are weed damage, a decrease in price, and increase in interest rates. The risks associated with producing barley in the Central Coast under no-till, 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 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.

9. LABOR:

Hourly wages for workers is $5.75 per hour for both machine and non-machine workers. This is based on wages paid by growers in this study. Adding 34% for Workers Compensation, Social Security, Medicare, insurance, and other possible benefits gives labor rates 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 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 extra labor involved in equipment set up, moving, maintenance, work breaks, and repair. Wages for management are not included as a cash cost. Any return above total costs is considered a return to management and risk.

10. 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.

Property Taxes: 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. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by 2 on a per acre basis.

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 7.89% per year. A nominal interest rate is the going market cost of borrowed funds.

Insurance: Insurance for farm investments vary depending on the assets included 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 $960 for the entire farm or $0.56 per acre.

Office Expense: 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.

11. NON-CASH OVERHEAD:

Non-cash overhead is comprised of depreciation and interest charged on equipment and other investments. Although farm equipment on typical farms in the Central Coast is often purchased used, this study shows the 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: 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. Purchase price and years of life are shown in Table 4.

Interest On Investment: Interest is charged on investments to account for income foregone (opportunity cost) that could be received from an alternative investment. Investments are assumed to be owned outright. Therefore, interest on investments is a non-cash cost. Investments include land, buildings, and equipment. Interest is calculated as the average value of the investment during its useful life, multiplied by 3.72% per year. Average value for equipment and buildings equals new cost plus salvage value divided by 2 on a per acre basis.

Average Value: 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 sector 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 only be used effectively in the agricultural sector.

12. EQUIPMENT CASH COSTS:

Equipment costs are composed of three parts; non-cash overhead, cash overhead, and operating costs. Both overhead factors have been discussed in previous sections. Operating costs consist of fuel, lubrication, and repairs.

In allocating 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. COSTS PER ACRE TO PRODUCE BARLEY

DRYLAND & NO-TILL

CENTRAL COAST - 1994

Labor Rate: $7.71/hr. machine labor Interest Rate: 7.89%

Yield per Acre: 1.00 Ton

Operation	Operation Time (Hrs/A)	Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
			Cash and Labor Costs per Acre				
Cultural:							
Apply Fallow Herbicide	0.05	0.49	1.69	7.19	0.00	9.37	
Apply Spring Herbicide	0.05	0.49	1.69	6.83	0.00	9.00	
Plant & Fertilize	0.18	1.68	14.64	21.18	0.00	37.51	
Apply Postemergent Herbicide	0.00	0.00	0.00	5.88	5.00	10.88	
Pickup Truck Use	0.08	0.74	0.59	0.00	0.00	1.34	
TOTAL CULTURAL COSTS	0.37	3.40	18.61	41.08	5.00	68.09	
Harvest:							
Harvest	0.19	1.74	6.67	0.00	0.00	8.41	
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	6.67	0.00	10.00	18.41	
Interest on operating capital @ 7.89%						4.96	
TOTAL OPERATING COSTS/ACRE		5.14	25.28	41.08	15.00	91.47	
TOTAL OPERATING COSTS/TON						91.47	
CASH OVERHEAD:							
Office Expense						4.90	
Share Rent @ 15% Of Gross Returns						14.59	
Property Taxes						0.85	
Property Insurance						0.61	
Investment Repairs						0.05	
TOTAL CASH OVERHEAD COSTS						21.00	
TOTAL CASH COSTS/ACRE						112.46	
TOTAL CASH COSTS/TON						112.46	
NON-CASH OVERHEAD:	Per producing		Annual Cost				
Investment	Acre		Depreciation	Interest @ 3.72%			
Shop Buildings	10.08		0.50	0.19		0.69	
Shop Tools	1.52		0.14	0.03		0.17	
Grain Storage	7.29		0.36	0.14		0.50	
Fertilizer Tanks	3.82		0.17	0.08		0.25	
Fuel Tanks	7.82		0.39	0.15		0.54	
Equipment	126.96		14.31	2.60		16.91	
TOTAL NON-CASH OVERHEAD COSTS	157.49		15.88	3.18		19.06	
TOTAL COSTS/ACRE						131.52	
TOTAL COSTS/TON						131.52	

Table 2. U. C. COOPERATIVE EXTENSION
COSTS AND RETURNS PER ACRE TO PRODUCE BARLEY
DRYLAND & NO-TILL CENTRAL COAST - 1994
Labor Rate: $7.71/hr. machine labor Interest Rate: 7.89%

	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	1.75	Pint	6.83	11.95	
Weedar 64	1.00	Pint	2.07	2.07	
Glean DF	0.17	Oz	34.60	5.88	
Seed:					
Barley	80.00	Lb	0.12	9.60	
Fertilizer:					
Aqua Ammonia	60.00	Lb	0.193	11.58	
Custom:					
Air Application	1.00	Appl	5.00	5.00	
Haul Grain	2.00	Ton	2.00	10.00	
Labor (machine)	0.67	hrs	7.71	5.14	
Labor (non-machine)	0.00	hrs	0.00	0.00	
Fuel - Gas	0.30	gal	1.17	0.35	
Fuel - Diesel	9.42	gal	0.85	8.01	
Lube				1.25	
Machinery repair				15.67	
Interest on operating capital @ 7.89%				4.96	
TOTAL OPERATING COSTS/ACRE				91.47	
TOTAL OPERATING COSTS/TON				91.47	
NET RETURNS ABOVE OPERATING COSTS				22.03	
CASH OVERHEAD COSTS:					
Office Expense				4.90	
Share Rent @ 15% Of Gross Returns				14.59	
Property Taxes				0.85	
Property Insurance				0.61	
Investment Repairs				0.05	
TOTAL CASH OVERHEAD COSTS/ACRE				21.00	
TOTAL CASH COSTS/ACRE				112.46	
TOTAL CASH COSTS/TON				112.46	
NON-CASH OVERHEAD COSTS (DEPRECIATION & INTEREST):					
Shop Buildings				0.69	
Shop Tools				0.17	
Grain Storage				0.50	
Fertilizer Tanks				0.25	
Fuel Tanks				0.54	
Equipment				16.91	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				19.06	
TOTAL COSTS/ACRE				131.52	
TOTAL COSTS/TON				131.52	
NET RETURNS ABOVE TOTAL COSTS				-18.02	

Table 3.

U. C. COOPERATIVE EXTENSION
MONTHLY CASH COSTS PER ACRE TO PRODUCE BARLEY
DRYLAND & NO-TILL
TWO YEAR SUMMER FALLOW ROTATION
CENTRAL COAST - 1994

Beginning JAN 93	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	TOTAL
Ending JUL 94	93	93	93	93	93	93	93	93	93	93	93	93	94	94	94	94	94	94	94	
Cultural:																				
Apply Fallow Herbicide	9																			9
Apply Spring Herbicide			9																	9
Plant & Fertilize											38									38
Apply Postemerg. Herbicide															11					11
Pickup Truck Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL CULTURAL COSTS	9	0	9	0	0	0	0	0	0	0	38	0	0	0	11	0	0	0	0	68
Harvest:																				
Harvest																			8	8
Haul:Field To Storage																			2	2
Haul to Market																			8	8
TOTAL HARVEST COSTS																			18	18
Interest on oper. capital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
TOTAL OPERATING COSTS/ACRE	10	0	9	0	0	0	0	0	0	0	38	0	0	0	11	1	1	1	19	91
TOTAL OPERATING COSTS/TON	10	0	9	0	0	0	0	0	0	0	38	0	0	0	11	1	1	1	19	91
OVERHEAD:																				
Office Expense	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Share Rent @ 15% Of Gross Returns							15													15
Property Taxes	0						0													1
Property Insurance	0						0													1
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0								0
TOTAL CASH OVERHEAD COSTS	1	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	21
TOTAL CASH COSTS/ACRE	10	0	9	0	0	0	16	0	0	0	38	1	1	1	12	1	1	1	19	112
TOTAL CASH COSTS/TON	10	0	9	0	0	0	16	0	0	0	38	1	1	1	12	1	1	1	19	112

U. C. COOPERATIVE EXTENSION

Table 4. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS

DRYLAND & NO-TILL

CENTRAL COAST - 1994

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	3049.12	584.41	819.66	15630.19
93	Combine - 20′	156238	10	14061.40	3196.63	612.69	859.31	18730.03
93	Drill - Notill 15′	157135	6	23570.10	3214.99	616.21	864.24	28265.54
93	Pickup Truck - 1/2 Ton	17240	7	2216.57	352.73	67.61	94.82	2731.73
93	Pickup Truck - 3/4 Ton	21759	7	2797.57	445.19	85.33	119.68	3447.77
93	Sprayer - 1000 Gal	12301	10	1107.10	251.68	48.24	67.66	1474.68
TOTAL		513701		54929.74	10510.34	2014.49	2825.37	70279.94
40% of New Cost *		205480		21971.90	4204.14	805.80	1130.15	28111.98

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

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	- Non-Cash Over. - Depre-ciation	Interest	------ Cash Overhead ------ Insur-ance	Taxes	Repairs	Total
INVESTMENT								
Fertilizer Tanks	27682	20	1245.70	566.37	108.55	152.25	15.00	2087.87
Fuel Tanks	56620	20	2831.00	1053.13	201.85	283.10	50.00	4419.08
Grain Storage	52800	20	2640.00	982.08	188.23	264.00	100.00	4174.31
Shop Buildings	73032	20	3651.60	1358.40	260.36	365.16	75.00	5710.52
Shop Tools	11000	10	990.00	225.06	43.14	60.50	100.00	1418.70
TOTAL INVESTMENT	221134		11358.30	4185.04	802.13	1125.01	340.00	17810.48

ANNUAL BUSINESS OVERHEAD COSTS

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

Table 5.

U. C. COOPERATIVE EXTENSION
HOURLY EQUIPMENT COSTS
DRYLAND & NO-TILL
CENTRAL COAST - 1994

Yr	Description	Actual Hours Used	COSTS PER HOUR: Non-Cash Over.- Depreciation	Cash Overhead - Interest	Insurance	Taxes	Operating - Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
93	360 HP 4WD Tractor	1120.0	3.99	1.09	0.21	0.29	4.97	20.42	25.39	30.97
93	Combine - 20’	228.8	24.58	5.59	1.07	1.50	18.93	13.33	32.26	65.00
93	Drill - Notill 15’	226.0	41.72	5.69	1.09	1.53	52.52	0.00	52.52	102.55
93	Pickup Truck - 1/2 Ton	290.1	3.06	0.49	0.09	0.13	2.09	5.05	7.14	10.90
93	Pickup Truck - 3/4 Ton	290.1	3.86	0.61	0.12	0.17	2.63	5.05	7.68	12.44
93	Sprayer - 1000 Gal	203.3	2.18	0.50	0.09	0.13	4.11	0.00	4.11	7.01

Table 6.

U. C. COOPERATIVE EXTENSION
RANGING ANALYSIS
DRYLAND & NO-TILL
CENTRAL COAST - 1994

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE BARLEY

	YIELD (TON/ACRE) 0.70	0.80	0.90	1.00	1.10	1.20	1.30
OPERATING COSTS/ACRE:							
Cultural Cost	68	68	68	68	68	68	68
Harvest Cost	13	15	17	18	20	22	24
Interest on operating capital	5	5	5	5	5	5	5
TOTAL OPERATING COSTS/ACRE	86	88	90	91	93	95	97
TOTAL OPERATING COSTS/TON	122.72	109.70	99.57	91.47	84.84	79.31	74.64
CASH OVERHEAD COSTS/ACRE	21	21	21	21	21	21	21
TOTAL CASH COSTS/ACRE	107	109	111	112	114	116	118
TOTAL CASH COSTS/TON	152.69	135.93	122.89	112.46	103.93	96.82	90.80
NON-CASH OVERHEAD COSTS/ACRE	19	19	19	19	19	19	19
TOTAL COSTS/ACRE	126	128	130	132	133	135	137
TOTAL COSTS/TON	179.53	159.55	143.99	131.52	121.31	112.79	105.57

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR BARLEY

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE) 0.70	0.80	0.90	1.00	1.10	1.20	1.30
79.45	-30	-24	-18	-12	-6	0	6
90.80	-22	-15	-8	-1	7	14	21
102.15	-14	-6	2	11	19	27	36
113.50	-6	3	13	22	32	41	51
124.85	1	12	23	33	44	55	65
136.20	9	21	33	45	57	68	80
147.55	17	30	43	56	69	82	95

NET RETURNS PER ACRE ABOVE CASH COSTS FOR BARLEY

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE) 0.70	0.80	0.90	1.00	1.10	1.20	1.30
79.45	-51	-45	-39	-33	-27	-21	-15
90.80	-43	-36	-29	-22	-14	-7	0
102.15	-35	-27	-19	-10	-2	6	15
113.50	-27	-18	-8	1	11	20	30
124.85	-19	-9	2	12	23	34	44
136.20	-12	0	12	24	35	47	59
147.55	-4	9	22	35	48	61	74

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR BARLEY

PRICE (DOLLARS PER TON)	YIELD (TON/ACRE) 0.70	0.80	0.90	1.00	1.10	1.20	1.30
79.45	-70	-64	-58	-52	-46	-40	-34
90.80	-62	-55	-48	-41	-34	-26	-19
102.15	-54	-46	-38	-29	-21	-13	-4
113.50	-46	-37	-27	-18	-9	1	10
124.85	-38	-28	-17	-7	4	14	25
136.20	-30	-19	-7	5	16	28	40
147.55	-22	-10	3	16	29	42	55

Table 7.

U. C. COOPERATIVE EXTENSION
MONTHLY CASH COSTS PER ACRE TO PRODUCE BARLEY
DRYLAND & NO-TILL
ANNUAL ROTATION
CENTRAL COAST - 1994

Beginning NOV 93 Ending OCT 94	NOV 93	DEC 93	JAN 94	FEB 94	MAR 94	APR 94	MAY 94	JUN 94	JUL 94	AUG 94	SEP 94	OCT 94	TOTAL
Cultural:													
Apply Fallow Herbicide	9												9
Plant & Fertilize	38												38
Apply Postemergent Herbicide					11								11
Pickup Truck Use	0	0	0	0	0	0	0	0	0				1
TOTAL CULTURAL COSTS	47	0	0	0	11	0	0	0	0				59
Harvest:													
Harvest									8				8
Haul From Field To Storage									2				2
Haul to Market													8
									8				
TOTAL HARVEST COSTS									18				18
Interest on oper. capital	0	0	0	0	0	0	0	0	1				3
TOTAL OPERATING COSTS/ACRE	47	0	0	0	11	1	1	1	19				81
TOTAL OPERATING COSTS/TON	47	0	0	0	11	1	1	1	19				81
OVERHEAD:													
Office Expense	1	1	1	1	1	1	1	1	1				5
Share Rent @ 15% Of Gross Returns									15				15
Property Taxes			0						0				1
Property Insurance			0						0				1
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL CASH OVERHEAD COSTS	1	1	1	1	1	1	1	1	16	0	0	0	21
TOTAL CASH COSTS/ACRE	48	1	2	1	12	1	1	1	35	0	0	0	102
TOTAL CASH COSTS/TON	48	1	2	1	12	1	1	1	35	0	0	0	102