1998

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE

~ *RICE*_

SACRAMENTO VALLEY

Multiple Crop Rotation

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SAMPLE COSTS FOR PRODUCING RICE
Sacramento Valley
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INTRODUCTION

The sample costs for rice production in the Sacramento Valley are presented in this study. The hypothetical farm used in this report consists of a total of 2,000 acres of which 700 planted to rice, 1,280 in other field and row crops, and 20 acres are in farmstead, roads, and irrigation system.

The practices described in this cost study are considered typical for rice in the Sacramento Valley. Sample costs given for labor, materials, equipment and contract services are based on 1998 prices. A blank *Your Cost* column is also provided to enter your actual costs on Table 2. Costs Per Acre To Produce Rice and Table 3. Costs And Returns Per Acre To Produce Rice. 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.

This study consists of Assumptions for Producing Rice and six tables.

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

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

A companion cost of production study for a rice only rotation in the Sacramento Valley is also available and entitled, "Sample Costs to Produce Rice , Sacramento Valley, Rice Only Rotation - 1998". For those interested in this and other studies, they can be requested through the Department of Agricultural Economics, U.C. Davis, (530) 752-3589 or (530) 752-1515, or from selected county Cooperative Extension offices. There is a nominal charge.

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ASSUMPTIONS

The following is a description of some general assumptions pertaining to sample costs to produce rice in the Sacramento Valley. Practices described are not recommendations by the University of California, but rather represent production procedures considered typical of a well managed rice farm for the Sacramento Valley. Costs and practices detailed in this study may not be applicable to all situations. Cultural practices for the production of rice vary by grower and region; variations can be significant. The 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. *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.*

Land and Rent. The farm consists of 2,000 acres of which the grower owns 1,650 acres of land and 350 acres are rented. Rice is grown on 700 acres consisting of 350 acres that are owned by the grower and 350 acres of rented ground. The grower-owned land costs $2,800 per acre. The other 350 acres is rented on a cash basis for $250 per acre with the grower receiving the government support payments. Land is not depreciated. Approximate cash rentals range from $200 to $300 per acre for ground growing rice and other crops in this region.

Cultural Practices and Material Inputs

Rotation. This study assumes rotation of the rice ground into other crops. Rice is typically grown for only one or two years after which the field is planted to other field or row crops. Regular crop rotation often has the effect of reducing pest control costs and increasing yield. Rotation can also help with straw disposal problems. Levees are put up and knocked down every year. Because the rice support program restricts which crops can be grown in rotation, farmers need to contact the Farm Service Agency (FSA) to determine the effect on their eligibility.

Land Preparation. Primary tillage, which includes chiseling, disking, land leveling, laser leveling, rolling, pulling, and tying checks, is performed from March through May. Operations done on a percent of the acreage are noted. All other operations are done on 100% of the acres.

All of the acreage is chiseled once. This is followed by two discings to break up large clods and dry the soil in advance of leveling the fields. There are two leveling/smoothing operations. The first is done in two passes with a triplane annually. A contract laser leveling company performs the second. Laser leveling is done once in seven years or it can be thought of as leveling 14% of the acreage each year. Finally, the ground is rolled prior to flooding and planting.

Planting. Following a preplant fertilization the ground is flooded, the seed is soaked and drained, and then broadcast by air on the fields. In normal years, planting occurs from April 20 through May 20, but may continue into June.

Irrigation. An irrigation district supplies the water, though growers may supplement this with well water in some areas. The amount of water used to irrigate rice will vary in the Sacramento Valley. Irrigation districts in the Valley were surveyed for pricing of water and the number of rice acres in the district to obtain a weighted average cost for water. The cost of irrigation water for this cost study is $45.53 per acre. With the exception of short-term drainage for stand establishment and/or weed control practiced by some growers, California rice fields are continuously flooded from planting until shortly before harvest.

Fertilization. A "starter" fertilizer, usually ammonium phosphate, is flown on before flooding at a rate of 200 pounds of material per acre. A basal preplant nitrogen application is also made using aqua ammonia at 120 pounds of nitrogen per acre. Just prior to flooding for planting, zinc sulfate is spread over the entire acreage. In July, the rice is topdressed with ammonium sulfate using a rate of 100 pounds of material per acre. All of the fertilizers are flown on the fields except for the aqua ammonia, which is injected 4-6 inches into the soil with a tractor-pulled applicator.

Weed Management. Broadleaf and grass weeds are controlled with separate applications. Grasses receive one aerial application in May. Broadleafs are treated twice, once in May by plane over 100% of the acreage and the second, a midseason treatment, in June or July. The midseason herbicide is applied to only 15% of the acreage to control escaped weeds from the first application.

Shrimp And Algae Management. Shrimp and algae control occurs after planting in May on 50% of the acreage with a copper sulfate application. All treatments are made with air applications.

The pesticides, rates, and cultural practices mentioned in this cost study are a few of those that are listed in the UC IPM Pest Management Guidelines, Rice and Integrated Pest Management for Rice. 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.

Harvest, Transportation, and Drying. The rice crop is harvested using one combine with two headers, a regular rice header and a stripper header. Growers interchange the headers on the combine to meet field conditions. In this study 25% of the rice is harvested using the conventional header and the remaining 75% is combined with the stripper header. The grower with this amount of acreage will also own a self-propelled bankout wagon to haul the grain from the combine in the field to trucks along the roadside.

In this cost analysis, rice is harvested at 22% moisture and is dried and stored at 14% at a commercial drier. A shrink factor (also known as recovery percent and percent good) is applied, which accounts for both loss of moisture and unripe grains during drying. Such losses are greater with higher moisture rice and certain specialty types, such as Calmochi and Japanese varieties. With a harvest that nets 90 hundredweight (cwt) per acre dry rice, the grower delivers 107.26 cwt per acre green or wet rice. Drying is charged at $0.684 per cwt on green rice and storage is charged at $0.55 on dry rice. Growers with their own trucks and on-farm dryers may have considerable savings. Cost to dry and store varies slightly across the industry.

Transportation of green rice from the field to the drier is a cost borne by the grower. Most rice farmers often treat hauling grain from the drier to storage as an expense of processing or marketing and may not appear as a line item cost in a farmer's budget. However, it is ultimately a cost and is reflected in the price returned to the producer. During harvest rice is transported from the field to a local drying facility. In this study, the cost of transporting the rice from the field to the drier is included as a separate line item, but the hauling cost between

the drier and warehouse is not included. The cost of transporting rice is based on the green weight of 107.26 cwt per acre and a $0.25 per cwt charge.

Costs for harvest operations are shown in Tables 1 and 3 while the equipment compliment is listed in Tables 4 and 5. If rice is custom harvested, harvest expense would be subtracted from harvest costs in Tables 1 and 3 and all equipment for harvest operations should be subtracted from investment costs in Table 4. A custom harvest charge would then be added to harvest costs in Tables 1 and 3.

Growers may choose to own harvesting equipment, purchased either new or used, or hire a custom harvester to perform the harvest. Many factors are important in deciding which harvesting option a grower uses. These considerations and appropriate method of analysis are discussed in *"Acquiring alfalfa hay harvest equipment: A financial analysis of alternatives"*.

Assessments. Under a state marketing order a mandatory assessment fee is collected and administered by the California Rice Research Board. This assessment of $0.05 per hundredweight (cwt) pays for rice research in California and is collected at the mill.

Assessments collected by the California Rice Promotion Board for marketing activities are paid by the processor at the time of sale to the buyer. Growers do not pay this assessment.

Straw Management. Postharvest operations for straw management include burning stubble, chopping and incorporating, and flooding and rolling. The percentage of acres utilizing specific straw management practices in this study is based on available industry information.

In this study, the grower will incorporate rice straw on 59% of rice acreage and burn the remaining 41%. Flooding and rolling the fields with a cage roller is used to manage 35% of the acreage while chopping and incorporating the straw with a stubble disc is used on 24% of the rice fields. The remaining 41% are burned. A small portion of the acreage is burned in the fall while the majority of the acreage is burned in the spring. Burning permits and fees can vary for each air pollution control district. For this study, a $40 burn permit is charged to the farm and additional $0.25 per acre is charged for each acre burned. Check with the air pollution office in your county for burning regulations and fees.

Yields. The crop yield used in this study is 80 cwt per acre at 14% moisture. Yields have varied over the years in the Sacramento Valley and are shown in Table A.

Table A. Annual yields for selected counties in the Sacramento Valley

	Cwt/Acre				
County	1992	1993	1994	1995	1996
Butte	84.2	81.4	89.0	81.0	80.8
Colusa	84.0	86.0	88.0	80.0	74.0
Glenn	86.0	86.0	88.0	80.0	75.8
Sacramento	84.0	82.0	92.0	76.0	80.0
Sutter	84.0	83.4	89.0	81.0	75.0
Tehama	76.2	62.0	76.0	60.0	70.0
Yolo	91.2	82.6	85.8	76.2	81.6
Yuba	92.0	86.0	89.0	82.0	76.0

Source: selected County Crop Reports, 1992-1996.

Returns. A selling price of a $8.50 per cwt of grain is used to estimate income from the sale of rice. This study also includes income received from the USDA Production Flexibility Contract (PFC). Support program income is calculated by taking 85% of the payment yield and multiplying it times the payment rate. In this study the payment yield is assumed to be 75 cwt per acre and the payment rate is $2.94 per cwt Program support is calculated as 75 cwt/acre X .85 X $2.94/cwt = $187.43/acre. In this study, every rice acre is assumed to be covered by program payments. In reality, however, maximum payment limitations may leave some acres uncovered with the effect of reducing the per cwt income.

The PFC payment rate is set by a number of factors at harvest time. Because the actual rate is not determined until the end of each growing season the USDA sets future PFC payment rates in a range. PFC payment rates change annually according to Table B. Contact the local Farm Service Agency office for further information about the support program.

Table B. PFC payment rate ranges for rice

	$/cwt	
Projected Year	Low	High
1998	2.94	3.02
1999	2.85	2.93
2000	2.61	2.68
2001	2.18	2.11
2002	2.04	2.10

Source: USDA-FSA Production Flexibility Contracts and Marking

Assistance Loans, Fact Sheet, revised December 1996.

Risk. Risks associated with rice production are not assigned a production cost. While this study makes an 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 rice production.

Labor. Basic hourly wages for workers are $8.00 per hour for both machine operators and non-machine workers. Adding 34% for SDI, FICA, insurance and other benefits raises the total labor costs to $10.72 per hour for machine operators and non-machine labor. The labor for operations involving machinery is 20% higher than the operation time to account for the additional time involved in equipment set up, moving, maintenance and repair.

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 investment repairs. Cash overhead costs are included in Tables 1, 2, 3 and 4.

Property Taxes. Counties charge a base property tax at the rate of 1% on the assessed value of the property including land, equipment, buildings, and improvements. In some counties special assessment districts exist and charge additional taxes on property. 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. Land value is assumed to remain unchanged.

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 10.46% per year. This interest rate is the going market cost of borrowed funds. The cost of postharvest operations are discounted back to the harvest month using a negative interest charge.

Insurance. Insurance for farm investments varies 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 $1,049 for the entire farm or $0.52 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.

Non-cash Overhead. Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. This study shows the current purchase price for new equipment and then adjusts the price to 50% of new cost to indicate a mix of new and used equipment. Annual ownership costs for equipment and investments are shown in Tables 1, 2, and 4 as the capital recovery cost on an annual per acre basis.

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). Put another way, it is equivalent to the annual payment on a loan for the investment with the downpayment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman).

The calculation for annual capital recovery costs is as follows.

$$\left[\left(\begin{array}{c}\text{Purchase}\\ \text{Price}\end{array} - \begin{array}{c}\text{Salvage}\\ \text{Value}\end{array}\right) \times \left(\begin{array}{c}\text{Capital}\\ \text{Recovery}\\ \text{Factor}\end{array}\right)\right] + \left[\begin{array}{c}\text{Salvage}\\ \text{Value}\end{array} \times \begin{array}{c}\text{Interest}\\ \text{Rate}\end{array}\right]$$

Salvage Value. Salvage value is an estimate of the remaining market value of an investment at the end of its useful life. It is calculated differently for different investments. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment. Salvage value is calculated as

$$New\ Price \times \%\ Remaining\ Value$$

Salvage value for other investments including irrigation systems, buildings, and miscellaneous equipment is zero. The salvage value for land is equal to the purchase price because land does not depreciate. Salvage value for investments can vary. The purchase price and salvage value for certain equipment and investments are shown in Table 4.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. It is the function of the interest rate and years of life of the equipment.

Interest Rate. The interest rate of 7.81% used to calculate capital recovery cost is the United States Department of Agriculture-Economic Reporting Service's (USDA-ERS) ten year average of California's agricultural sector long-run real 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, not including inflation. In other words, the next best alternative use for these resources is in another agricultural enterprise.

Equipment 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 repairs, fuel, and lubrication.

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 Table 1 is determined by multiplying the total hourly operating cost in Table 5 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, travel and down time. Prices for on-farm delivery of diesel and gasoline are $0.78 and $1.22 per gallon, respectively.

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Table 1.

U.C. COOPERATIVE EXTENSION
COSTS PER ACRE TO PRODUCE RICE
SACRAMENTO VALLEY - 1998
MULTIPLE CROP ROTATION

Labor Rate: $10.72/hr. machine labor
$10.72/hr. non-machine labor

Operating Interest Rate: 10.46%
Yield per Acre: 90.0 Cwt

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Chisel - 1X	0.19	2	3	0	0	5	
Disc 2X	0.28	4	4	0	0	8	
Triplane Fields 2X	0.36	5	3	0	0	7	
Laser Level - 1 In 7 Years	0.00	0	0	0	11	11	
Fertilize - 16-20-0 @ 200#/Acre	0.00	0	0	25	7	32	
Fertilize - Aqua @ 120 Lbs N/Acre	0.20	3	1	32	3	39	
Roll Final Seedbed	0.14	2	1	0	0	3	
Pull Checks	0.14	2	1	0	0	3	
Install Boxes	0.25	3	0	4	0	6	
Tie Checks	0.05	1	0	0	0	1	
Fertilize - Zinc	0.00	0	0	23	4	27	
Irrigate	1.00	11	0	45	0	56	
Soak and Deliver Seed	0.00	0	0	0	4	4	
Plant @ 160 Lbs/Acre	0.00	0	0	20	10	31	
Shrimp Control - 50% Of Acreage	0.00	0	0	4	2	6	
Weed Control - Grasses	0.00	0	0	42	6	48	
Weed Control - Broadleafs	0.00	0	0	28	5	33	
Weed Control - Midseason 15% Of Acreage	0.00	0	0	4	1	5	
Fertilize - Topdress Ammonium Sulfate	0.00	0	0	8	4	11	
Pickup Truck Use	0.14	4	1	0	0	5	
TOTAL CULTURAL COSTS	2.75	35	14	236	56	340	
Harvest:							
Combine Rice							
- Regular Header 25% Of Acreage	0.15	2	5	0	0	6	
- Stripper Header 75% Of Acreage	0.24	3	7	0	0	10	
Bankout Rice	0.21	3	3	0	0	5	
Haul Rice To Dryer	0.00	0	0	0	27	27	
Dry & Store Rice	0.00	0	0	0	123	123	
Rice Research Board Assessment	0.00	0	0	5	0	5	
TOTAL HARVEST COSTS	0.60	8	14	5	150	176	

Table 1. Continued

Operation	Operation Time (Hrs/A)	Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
		Cash and Labor Costs per Acre					
Postharvest:							
Spring Burn - 33% Of Acreage	0.28	3	0	0	0	3	
Mow Levees - 41% Of Acreage	0.03	0	0	0	0	1	
Burn Permit & Fees	0.00	0	0	0	0	0	
Fall Burn - 8% Of Acreage	0.07	1	0	0	0	1	
Flood & Roll - 35% Of Acreage	0.03	0	0	5	0	5	
Knock Down Levees	0.13	2	1	0	0	2	
Chop Straw - 24% Of Acreage	0.20	3	2	0	0	4	
Disc Straw - 24% Of Acreage	0.14	2	1	0	0	3	
TOTAL POSTHARVES COSTS	0.88	11	4	5	0	19	
Interest on operating capital @ 10.46%						14	
TOTAL OPERATING COSTS/ACRE		53	32	245	206	550	
TOTAL OPERATING COSTS/CWT						6.11	
CASH OVERHEAD:							
Land Rent						125	
Office Expense						15	
Liability Insurance						1	
Property Taxes						16	
Property Insurance						11	
Investment Repairs						2	
TOTAL CASH OVERHEAD COSTS						170	
TOTAL CASH COSTS/ACRE						719	
TOTAL CASH COSTS/CWT						7.99	
NON-CASH OVERHEAD:							
Investment	Per producing Acre	-- Annual Cost -- Capital Recovery (7.81% Interest Rate)					
Land - Rice	1400	109				109	
Fuel Tanks & Pumps	9	1				1	
Shop Building	39	4				4	
Shop Tools	8	1				1	
Irrigation System	29	3				3	
Tool Carrier	14	1				1	
Fuel Wagon	2	0				0	
Backhoe	4	0				0	
Equipment	264	36				36	
TOTAL NON-CASH OVERHEAD COSTS	1768	156				156	
TOTAL COSTS/ACRE						875	
TOTAL COSTS/CWT						9.73	

U.C. COOPERATIVE EXTENSION

Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE RICE
SACRAMENTO VALLEY - 1998
MULTIPLE CROP ROTATION

Labor Rate: $10.72/hr. machine labor
$10.72/hr. non-machine labor
Operating Interest Rate: 10.46%

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Rice	90.00	Cwt	8.50	765	
Support Payment	63.75	Cwt	2.94	187	

TOTAL GROSS RETURNS FOR RICE				952	
OPERATING COSTS					
Custom:					
Laser Leveling	0.14	Acre	75.00	11	
Air Appl - Dry Fertilizer	3.00	Cwt	3.50	10	
Air Appl - Zinc	1.00	Acre	3.50	4	
Soaking - Seed	1.60	Cwt	1.75	3	
Delivery - Seed	1.92	Cwt	0.63	1	
Air Appl - Seed	1.92	Cwt	5.30	10	
Air Appl - Shrimp	0.50	Acre	4.75	2	
Air Appl - Ordram	1.00	Acre	6.00	6	
Air Appl - Londax	1.00	Acre	4.95	5	
Ground Appl - Super Wham	0.15	Acre	6.50	1	
Fertilizer:					
16-20-0	200.00	Lb	0.123	25	
Aqua Ammonia	120.00	Lb N	0.27	32	
Zinc Sulfate 36%	50.00	Lb	0.46	23	
Ammonium Sulfate	100.00	Lb	0.08	8	
Rent:					
Fertilizer Applicator	1.00	Each	3.00	3	
Miscellaneous:					
Rice Boxes	0.19	Acre	20.00	4	
Irrigation:					
Water	1.00	Acre	45.26	45	
Water - Straw Management	0.10	Acre	45.26	5	
Seed:					
Seed - Rice	1.60	Cwt	12.75	20	
Herbicide:					
Copper Sulfate	5.00	Lb	0.75	4	
Ordram 10G	27.00	Lb	1.56	42	
Londax 60 DF	1.67	Oz	17.00	28	
Super Wham	0.45	Qt	8.49	4	

Table 2. Continued U.C. COOPERATIVE EXTENSION

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
Contract:					
Hauling	107.26	Cwt	0.25	27	
Drying Charge	107.26	Cwt	0.684	73	
Storage Charge	90.00	Cwt	0.55	49	
Rice Research Fee	90.00	Cwt	0.05	5	
Burn Permit:					
Burning Fees	1.00	Acre	0.25	0	
Burn Permit	1.00	Acre	0.057	0	
Labor (machine)	3.32	Hrs	10.72	36	
Labor (non-machine)	1.60	Hrs	10.72	17	
Fuel - Gas	0.57	Gal	1.22	1	
Fuel - Diesel	20.56	Gal	0.78	16	
Lube				3	
Machinery repair				13	
Interest on operating capital @ 10.46%				14	
TOTAL OPERATING COSTS/ACRE				550	
TOTAL OPERATING COSTS/CWT				6.11	
NET RETURNS ABOVE OPERATING COSTS				403	
CASH OVERHEAD COSTS:					
Land Rent				125	
Office Expense				15	
Liability Insurance				1	
Property Taxes				16	
Property Insurance				11	
Investment Repairs				2	
TOTAL CASH OVERHEAD COSTS/ACRE				170	
TOTAL CASH COSTS/ACRE				719	
TOTAL CASH COSTS/CWT				7.99	
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY - 7.81% Interest Rate):					
Land				109	
Fuel Tanks & Pumps				1	
Shop Building				4	
Shop Tools				1	
Irrigation System				3	
Tool Carrier				1	
Fuel Wagon				0	
Backhoe				0	
Equipment				36	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				156	
TOTAL COSTS/ACRE				875	
TOTAL COSTS/CWT				9.73	
NET RETURNS ABOVE TOTAL COSTS				77	

U.C. COOPERATIVE EXTENSION

Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE RICE
SACRAMENTO VALLEY - 1998
MULTIPLE CROP ROTATION

Beginning JAN 98 Ending DEC 98	JAN 98	FEB 98	MAR 98	APR 98	MAY 98	JUN 98	JUL 98	AUG 98	SEP 98	OCT 98	NOV 98	DEC 98	TOTAL
Cultural:													
Chisel - 1X				5									5
Disc 2X				8									8
Triplane Fields 2X				7									7
Laser Level - 1 In 7 Year				11									11
Fertilize - 16-20-0 @ 200 Lbs/Acre				32									32
Fertilize - Aqua @ 120 Lbs/Acre				39									39
Roll Final Seedbed				3									3
Pull Checks				3									3
Install Boxes				6									6
Tie Checks				1									1
Fertilize - Zinc				27									27
Irrigate					11	11	11	11	11				56
Soak and Deliver Seed					4								4
Plant @ 160 Lbs/Acre					31								31
Shrimp Control - 50% Of Acreage					6								6
Weed Control - Grasses					48								48
Weed Control - Broadleafs					33								33
Weed Control - Midseason - 15% Of Acreage						5							5
Fertilize - Topdress Ammonium Sulfate							11						11
Pickup Truck Use	0	0	0	0	0	0	0	0	0	0	0	0	5
TOTAL CULTURAL COSTS	0	0	0	141	134	16	23	12	12	0	0	0	340
Harvest:													
Combine Rice													
- Regular Header 25% Of Acreage									6				6
- Stripper Header 75% Of Acreage									10				10
Bankout Rice									5				5
Haul Rice To Dryer									27				27
Dry & Store Rice										123			123
TOTAL HARVEST COSTS									49	123			171
Assessment:													
Rice Research Board Assessment										5			5
TOTAL HARVEST COSTS										5			5

Table 3. Continued

Beginning JAN 98 Ending DEC 98	JAN 98	FEB 98	MAR 98	APR 98	MAY 98	JUN 98	JUL 98	AUG 98	SEP 98	OCT 98	NOV 98	DEC 98	TOTAL
Postharvest:													
Spring Burn - 33% Of Acreage			3										3
Mow Levees - 41% Of Acreage										1			1
Burn Permit & Fees										0			0
Fall Burn - 8% Of Acreage										1			1
Flood & Roll - 35% Of Acreage										5			5
Knock Down Levees										2			2
Chop Straw - 24% Of Acreage											4		4
Disc Straw - 24% Of Acreage											3		3
TOTAL POSTHARVEST COSTS			3							9	7		19
Interest on oper. Capital*	0	0	0	1	2	3	3	3	3	-1	0	0	14
TOTAL OPERATING COSTS/ACRE	0	0	3	143	136	19	26	14	64	136	7	0	550
TOTAL OPERATING COSTS/CWT	0.00	0.00	0.04	1.59	1.51	0.21	0.29	0.16	0.71	1.51	0.08	0.00	6.11
OVERHEAD:													
Land Rent										125			125
Office Expense	1	1	1	1	1	1	1	1	1	1	1	1	15
Liability Insurance	1												1
Property Taxes				8								8	16
Property Insurance	6						6						11
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	2
TOTAL CASH OVERHEAD COSTS	8	1	1	9	1	1	7	1	1	126	1	9	170
TOTAL CASH COSTS/ACRE	8	2	5	152	138	20	33	16	65	262	9	10	719
TOTAL CASH COSTS/CWT	0.09	0.02	0.05	1.69	1.53	0.23	0.37	0.18	0.72	2.91	0.10	0.11	7.99

* Postharvest operation costs are discounted back to the time of the first harvest

U.C. COOPERATIVE EXTENSION

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

SACRAMENTO VALLEY - 1998

MULTIPLE CROP ROTATION

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead - Insur-ance	Taxes	Total
98	150 HP 2WD Tractor	94545	12	23637	11163	421	591	12175
98	200 HP 4WD Tractor	128700	16	23051	13592	541	759	14891
98	80 HP Crawler	44659	16	7999	4716	188	263	5167
98	Bankout SP 150 Cwt	79365	10	14035	10749	333	467	11549
98	Checker	2388	20	124	237	9	13	259
98	Chisel - 21'	13581	10	2402	1839	57	80	1976
98	Combine - No Header	190000	7	51705	30428	862	1209	32499
98	Disc - Offset 21'	21735	10	3844	2944	91	128	3163
98	Disc - Stubble 16'	20774	10	3674	2814	87	122	3023
98	Disc Ridger - 12'	8000	10	1415	1083	34	47	1164
98	Header - Regular 18'	23500	7	6395	3764	107	149	4020
98	Header - Stripper 18'	24500	7	6667	3924	111	156	4191
98	Mower - Flail 12'	13806	20	720	1370	52	73	1495
98	Mower - Sicklebar 7'	3700	10	654	501	16	22	538
98	Pickup - 1/2 Ton	17995	7	6826	2664	88	124	2877
98	Pickup - 3/4 Ton	21450	7	8137	3176	105	148	3429
98	Roller - Cage 22'	22500	10	834	3266	83	117	3466
98	Roller - Rice 22'	25000	10	3698	3436	102	143	3682
98	Triplane - 18'	20914	10	0	3090	75	105	3269
TOTAL		777112		165817	104757	3362	4715	112833
40% of New Cost *		310845		66327	41903	1345	1886	45133

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

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	------ Cash Overhead ------ Insur-ance	Taxes	Repairs	Total
INVESTMENT								
Backhoe	8115	15	812	907	32	45	405	1388
Fuel Tanks & Pumps	18500	20		1858	66	93	275	2291
Fuel Wagon	3478	10	348	490	14	19	100	622
Irrigation System	20000	20		2008	71	100	0	2180
Land	980000	40	980000	76538	6987	9800	0	93325
Shop Building	78506	20		7883	280	393	1570	10126
Shop Tools	15000	20	1500	1473	59	83	413	2027
Tool Carrier	27462	20	2746	2696	108	151	302	3257
TOTAL INVESTMENT	1151061		985406	93853	7616	10682	3065	115216

U.C. COOPERATIVE EXTENSION

Table 4.Continued

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land Rent	350.00	Acre	250.00	87500
Liability Insurance	2000.00	Acre	0.60	1200
Office Expense	2000.00	Acre	15.00	30000

Table 5. HOURLY EQUIPMENT COSTS
SACRAMENTO VALLEY - 1998
MULTIPLE CROP ROTATION

ANNUAL EQUIPMENT COSTS

Yr	Description	Actual Hours Used	COSTS PER HOUR - Capital Recovery	- Cash Overhead - Insurance	Taxes	- Operating - Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
98	150 HP 2WD Tractor	999.3	4.47	0.17	0.24	2.71	2.20	4.91	9.78
98	200 HP 4WD Tractor	999.0	5.44	0.22	0.30	1.99	10.41	12.40	18.36
98	80 HP Crawler	1003.8	1.88	0.07	0.10	0.69	3.52	4.21	6.27
98	Bankout SP 150 Cwt	299.7	14.35	0.44	0.62	0.10	10.76	10.86	26.28
98	Checker	100.1	0.95	0.04	0.05	0.22	0.00	0.22	1.26
98	Chisel - 21'	199.5	3.69	0.11	0.16	1.88	0.00	1.88	5.84
98	Combine - No Header	427.9	28.45	0.81	1.13	9.24	15.62	24.86	55.24
98	Disc - Offset 21'	200.0	5.89	0.18	0.26	2.30	0.00	2.30	8.62
98	Disc - Stubble 16'	200.0	5.63	0.17	0.24	2.20	0.00	2.20	8.24
98	Disc Ridger - 12'	199.5	2.17	0.07	0.09	0.84	0.00	0.84	3.18
98	Header - Regular 18'	284.1	5.30	0.15	0.21	2.49	0.00	2.49	8.15
98	Header - Stripper 18'	284.7	5.51	0.16	0.22	2.60	0.00	2.60	8.48
98	Mower - Flail 12'	140.0	3.92	0.15	0.21	3.34	0.00	3.34	7.61
98	Mower - Sicklebar 7'	20.0	10.02	0.31	0.44	1.00	0.00	1.00	11.77
98	Pickup - 1/2 Ton	285.0	3.74	0.12	0.17	0.87	2.81	3.68	7.72
98	Pickup - 3/4 Ton	285.0	4.46	0.15	0.21	1.04	2.81	3.85	8.66
98	Roller - Cage 22'	22.0	59.25	1.51	2.12	1.68	0.00	1.68	64.56
98	Roller - Rice 22'	98.0	14.03	0.42	0.59	1.87	0.00	1.87	16.90
98	Triplane - 18'	426.0	2.90	0.07	0.10	2.10	0.00	2.10	5.17

Table 6.

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
SACRAMENTO VALLEY - 1998
MULTIPLE CROP ROTATION

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE RICE

	YIELD (CWT/ACRE)						
	75	80	85	90	95	100	105
OPERATING COSTS/ACRE:							
Cultural Cost	340	340	340	340	340	340	340
Harvest Cost	148	157	167	176	185	195	204
Postharvest Cost	19	19	19	19	19	19	19
Interest on operating capital	14	14	14	14	14	14	14
TOTAL OPERATING COSTS/ACRE	522	531	540	550	559	568	578
TOTAL OPERATING COSTS/CWT	6.95	6.64	6.35	6.11	5.88	5.68	5.50
CASH OVERHEAD COSTS/ACRE	170	170	170	170	170	170	170
TOTAL CASH COSTS/ACRE	691	701	710	719	729	738	747
TOTAL CASH COSTS/CWT	9.22	8.76	8.35	7.99	7.67	7.38	7.12
NON-CASH OVERHEAD COSTS/ACRE	155	156	156	156	156	157	157
TOTAL COSTS/ACRE	846	856	866	875	885	894	904
TOTAL COSTS/CWT	11.29	10.70	10.18	9.73	9.31	8.94	8.61

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR RICE

PRICE (DOLLARS/CWT)		YIELD (CWT/ACRE)						
Rice		75	80	85	90	95	100	105
	Payment	63.75	63.75	63.75	63.75	63.75	63.75	63.75
7.75	2.94	247	277	306	335	365	394	424
8.00	2.94	266	297	327	358	389	419	450
8.25	2.94	285	317	349	380	412	444	476
8.50	2.94	303	337	370	403	436	469	502
8.75	2.94	322	357	391	425	460	494	529
9.00	2.94	341	377	412	448	484	519	555
9.25	2.94	360	397	434	470	507	544	581

Table 6. Continued

NET RETURNS PER ACRE ABOVE CASH COSTS FOR RICE

PRICE (DOLLARS/CWT)		YIELD (CWT/ACRE)						
Rice		75	80	85	90	95	100	105
	Payment	63.75	63.75	63.75	63.75	63.75	63.75	63.75
7.75	2.94	77	107	136	166	195	224	254
8.00	2.94	96	127	158	188	219	249	280
8.25	2.94	115	147	179	211	243	274	306
8.50	2.94	134	167	200	233	266	299	333
8.75	2.94	152	187	221	256	290	324	359
9.00	2.94	171	207	243	278	314	349	385
9.25	2.94	190	227	264	301	338	374	411

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR RICE

PRICE (DOLLARS/CWT)		YIELD (CWT/ACRE)						
Rice		75	80	85	90	95	100	105
	Payment	63.75	63.75	63.75	63.75	63.75	63.75	63.75
7.75	2.94	-78	-49	-20	10	39	68	97
8.00	2.94	-59	-29	2	32	63	93	123
8.25	2.94	-40	-9	23	55	86	118	150
8.50	2.94	-22	11	44	77	110	143	176
8.75	2.94	-3	31	65	100	134	168	202
9.00	2.94	16	51	87	122	158	193	228
9.25	2.94	35	71	108	145	181	218	255