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**U.C. COOPERATIVE EXTENSION**  
**SAMPLE COST TO ESTABLISH AND PRODUCE**

***WILD RICE***



**INTERMOUNTAIN REGION – 2000**  
**SHASTA – LASSEN COUNTIES**

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# **SAMPLE COSTS TO PRODUCE WILD RICE Establishment and Production IN SHASTA AND LASSEN COUNTIES - 2000**

## **INTRODUCTION**

The detailed costs for wild rice establishment and production in the Intermountain Region, Fall River Valley and Big Valley area of Shasta and Lassen Counties, are presented in this study. The hypothetical farm used in this report consists of 500 acres with 80 acres of wild rice production and 10 acres dedicated to roads and buildings. The remainder of the farm is planted to row and field crops.

The practices described in this study are based on the production procedures considered typical for this crop and area, but not all of the practices are used by producers during any given year. Sample costs given for labor, materials, equipment and custom services are based on current figures. Some costs and practices detailed in this study may not be applicable to all situations. 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 Table 1, 2, 3, and 4.

Tables included:

- Table 1. Costs Per Acre To Establish Wild Rice
- Table 2. Costs And Returns Per Acre To Establish Wild Rice
- Table 3. Costs Per Acre To Produce Wild Rice
- Table 4. Costs And Returns Per Acre To Produce Wild Rice
- Table 5. Monthly Cash Costs Per Acre To Produce Wild Rice
- Table 6. Whole Farm Annual Equipment, Investment And Business Overhead
- Table 7. Hourly Equipment Costs
- Table 8. Ranging Analysis
- Table 9. Cost and Returns/Breakeven Analysis

For an explanation of calculations used for the study refer to the attached General Assumptions or call the Department of Agricultural and Resource Economics, Cooperative Extension, University of California, Davis, California, (530) 752-3589, download from their website, [agecon.ucdavis.edu](http://agecon.ucdavis.edu), or call the Shasta-Lassen Counties Cooperative Extension office, McArthur at the intermountain Fairgrounds, (530) 336-5784.

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## U.C. Cooperative Extension

### SAMPLE COST TO ESTABLISH AND PRODUCE WILD RICE Intermountain Region, Shasta-Lassen Counties - 2000

#### ASSUMPTIONS

The following assumptions pertain to sample costs to establish and produce wild rice in Shasta and Lassen Counties of the Intermountain Region. The costs are based on the cultural practices used by growers in the region, some of which may not be used during every production year. The cultural practices and production inputs for growing wild rice vary considerably amongst growers and fields. 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 study is based on a 500 acre field and row crop farm, of which 80 acres are dedicated to growing wild rice and 10 acres are occupied by roads and farmstead. Other crops that may be grown on the farm are small grains, timothy hay, sudangrass hay, and pasture. The land is valued at \$1,500 per acre. In this study, the land is rented on a cash basis with the landowner receiving \$100 per acre. The tenant pays all cash costs to produce the crop. Interest cost for the land, and the depreciation and maintenance costs for the irrigations system are incurred by the landowner. Other rental agreements for wild rice include combinations of rent and cost. For example, the landowner pays, in addition to the above costs, one-third of the irrigation electrical costs and fertilizer costs. The landowner receives one-third of the gross income and the tenant pays all other cash costs.

**Seed Variety.** In this study, certified seed is planted for grain production. Franklin, the current California seed variety selected for high yield and high shatter resistance, is maintained by the University of California Foundation Seed Services. Certified seed is produced from foundation seed purchased from California Foundation Seed Services. Only one generation of certified seed can be produced from a foundation seed field. Typically, growers purchase certified seed in the fall and place it in cold storage until spring planting.

**Labor.** Basic hourly wages for workers are \$7.60 per hour for machine and \$6.00 per hour for non-machine (field workers) labor. Adding 34% for the employers share of federal and state payroll taxes, insurance, and other benefits increases the labor rates to \$10.18 per hour for machine and \$8.04 per hour for non-machine labor. The labor for operations involving machinery are 20% higher than the operation time to account for the extra labor involved in equipment set up, moving, maintenance and repair. A farm manager is paid \$2,500 per month or \$30,000 per year. Adding the employers share of payroll taxes and benefits brings the cost to \$40,200 and is included as cash overhead. In addition, the farm manager is furnished a leased pickup for personal and business use. The pickup is valued at \$1,000 per month, which includes license, insurance, and fuel, is included as cash overhead. Any return above total costs are considered a return to management and investment.

## Stand Establishment, Production Cultural Practices, and Material Inputs

**Site Preparation.** The seedbed, or paddy, preparation begins in April by discing the field in two different directions. A custom operator then laser levels the field and pulls the levees. Most growers build permanent straight levee systems with each paddy being about ten acres. The grower installs the rice boxes in the levees using a backhoe.

**Fertilization.** Gypsum at 500 pounds per acre is applied pre-plant by ground as a calcium and sulfur source. Urea at 120 pounds of N per acre and ten pounds of actual zinc per acre as zinc sulfate is ground applied prior to planting. The zinc application is assumed to provide adequate zinc for the entire five year production cycle. The fertilizers are incorporated in a single pass with a disc. The crop is not top-dressed during the establishment year. During the production years, Urea at 40 pounds of N per acre is applied by air in May at flooding. Additional applications of Urea at 40 pounds per acre of N are applied by air just prior to boot (seed head formed, but not emerged) in late June and at boot in early July. Leaf analysis, costing \$1.00 per acre, is done in July (boot stage) to determine if the N and Zn levels are adequate.

**Irrigation.** Wild rice is irrigated in much the same way as white rice (*Oryza sativa*), by flooding paddies in between levees. Flooding begins in May in both the establishment and production years and is maintained throughout the season. In the establishment year the flooding is done after planting. The fields are drained prior to harvest. After the post harvest operations, the fields are flooded with about 4 acre inches to seal the seedbed for the winter. A total of 48 acre inches is applied to the field. The water is pumped from the river using a 10 hp electric pump with a 20 foot lift. The pumping cost is calculated to be \$11.52 per acre foot.

**Stand Establishment.** Wild rice is planted at a rate of 100 pounds of seed per acre. Planting occurs in May before the paddies are flooded. Seed shatter prior to and during harvest will reseed the field in the following years. This results in plants being naturally selected with high shattering ability, thus decreasing harvested yield. To maintain an adequate yield during the production years, fields are replanted after the fourth production year with new certified seed to maintain shatter resistance. Prior to reseeding, a rotation crop or fallowing is recommended to eliminate volunteer seed. Growers pay approximately \$0.60 per pound for the green seed (certified Franklin) in the fall. Wild rice seed is stored in cold water, and in the spring, the grower pays an additional \$0.15 per pound for the cold storage. In this study, the seed is purchased in the spring at \$0.75 per pound. Some growers may plant foundation seed to produce one year of certified seed, but seed production is not included in this study. Growers purchasing foundation seed will pay \$2.00 per pound.

**Pest Management.** Pest management consists of continuous bird control and custom air applications of an insecticide and algicide treatment. Copper sulfate is used for algae control and is applied to about 50% of the acreage. During the establishment year Malathion 55 is applied to 75% of the acreage for midge control. Many species of birds eat the seed heads and are considered a pest in wild rice. Growers control bird damage using several different techniques. In this study, birds are managed by shooting them with a shotgun, using scare devices such as bird screamers and zon guns. In addition growers contract with the USDA Animal Damage Control Agency for trapping the birds. No other pest problems are assumed.

The practices and inputs used in this cost study serve only as a typical guide. For information and specific pesticide use, contact your pest control advisor. Written recommendations are required for many pesticides and are written by licensed pest control advisors. For additional information and pesticide use permits, contact the Shasta-Lassen County field crops farm advisor.

**Weed Control.** No herbicides are registered for weed control in wild rice during the growing season. The levees are maintained by spraying with Roundup at 2 quarts per acre in the fall during the establishment year, and in the spring and fall during the production years.

**Establishment Costs.** The establishment cost is the sum of cash costs for land preparation, planting, production expenses, and cash overhead for growing wild rice through the first year of harvest minus any returns from production. The Total Accumulated Net Cash Cost in the first year as shown in Table 2, represents the establishment cost per acre. For this study, the cost is \$418.07 per acre or \$33,453 for the 80 acre field. The establishment cost is amortized over the remaining four years of crop life.

**Harvest.** Wild rice is typically harvested when grain in the heads is fully mature (dark purple – black) and grain moisture is 33 - 36% moisture. Early harvest occurs when birds cause heavy shattering and when the plants lodge from excessive nitrogen or bad weather. Paddies are drained a few days to a week before harvest to allow soils to provide better footing for the combine. The wild rice is usually custom harvested because fields are small and harvesting equipment is costly. Trucks for the bankout operation and transportation to the cooperative are provided by the grower. Bins are loaded onto the bobtail truck at the cooperative and transported to the field for filling. The harvested material is dumped directly from the harvester into the bins on the truck for transportation to the cooperative. It is assumed that the grower owns 20% of the seed bins required for the harvest. If a grower does his own harvesting, equipment for the required operations should be added to the investments on Tables 1, 3 and 6. Labor, fuel, repairs, depreciation and interest on investment would need to be added to the harvest operations and custom charges subtracted.

**Post-Harvest.** The paddies are disced twice with a stubble disc to chop and incorporate the chaff into the soil for decomposition. The fields are then flooded to maintain the moisture in the volunteer rice seed that will be next years crop and to seal the field for the winter. For additional income, some growers place duck blinds in the levees, flood the field during the winter, and rent the blinds for hunting. However, hunting is not included in this study.

**Yields & Returns.** The crop yield used in this study is a green weight of 1,400 pounds per acre for the establishment year and 1,600 pounds per acre in the production year. It is assumed that the grower will have 50% recovery. The recovery rate is the percentage of finished (marketable) wild rice by weight in relation to green weight at harvest taking into account; shatter, moisture and cleaning losses. An estimated return price of \$0.42 per pound of green grain at 50% recovery is used. Growers receive a one cent reduction for each percent below 50% recovery and a bonus of one cent for each percent over 50%. Returns will vary according to seed quality and market. The yields and prices used in this cost study are estimates based on the current market.

**Risk.** The risks associated with the production of wild rice 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 wild rice production. Because of the risks involved, access to a market is crucial. A grower should identify potential markets and where possible, have a contract for their grain before any wild rice production begins.

**Investment.** The investments shown in Table 6 are those that are partially or completely allocated to the wild rice operation. Costs of investments such as tractors, trucks, buildings, etc. can be spread over the whole farm. Annual investments shown in Tables 1 and 3 represent depreciation and opportunity cost for each investment on an annual per acre basis.

**Cash Overhead.** County taxes are calculated as 1.0% of the average value of equipment, buildings and improvements. Insurance on assets is charged at 0.723% of the average value of the asset over its useful life. Liability insurance covers accidents on the farm and costs \$684 for the entire farm or \$1.37 per acre. Various farm and office expenses are estimated at \$30 per acre for the ranch. These expenses include office supplies, utilities, telephones, bookkeeping, accounting, legal fees and maintenance, etc.

*Assessments.* A State marketing order requires mandatory assessment fees to support the California Wild Rice Program. These fees are assessed each year at \$8.00 per acre. It is assumed that the wild rice grower in this cost study is a member of the Fall River Wild Rice Cooperative and pays a yearly acreage fee of \$1.00 per acre. Growers that become a member of the cooperative are charged a refundable, one-time membership fee of \$5,000. The cooperative has a membership limit and new members must be approved by the board of directors and/or purchase a membership from current members. Member growers that increase their wild rice acreage over their original acreage must pay an expansion fee which varies from year to year. Contact the Fall River Wild Rice Cooperative, Osprey Drive, Fall River Mills, CA 96028 for further information.

**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 40% 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, 3, 4 and 6 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 down payment 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 the annual capital recovery costs is as follows:

$$\frac{\text{Purchase Price} - \text{Salvage Value}}{\text{Capital Recovery Factor}} + \frac{\text{Salvage Value} \times \text{Interest Rate}}$$

*Salvage Value.* Salvage value is an estimate of the remaining value of an investment at the end of useful life. For farm machinery (e.g., tractors and implements) the salvage value is calculated as salvage value = (used market value/list price) x purchase price. The used market value is taken from current equipment auction sales and dealer trade-ins. The life in years is estimated by dividing the wear-out life, as given by American Society of Agricultural Engineers (ASAE) by the expected hours of use. 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. The purchase price and salvage value for equipment and investments are shown in Table 6.

*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. The capital recovery factor is the amount of money required at the end of each year to pay interest on the unrecovered capital at the designated rate and recover the investment within the specified number of years.

**Interest.** The interest rate of 7.08% 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. Interest on operating capital is based on cash costs and is calculated monthly until harvest at a rate of 10.71% per year. Real interest rates are used in this study, so no adjustments for inflation are included.

**Equipment costs.** Most of the equipment inventory on typical wild rice farms in Shasta-Lassen County have high hours of use which reduces their value. This study shows current purchase price for new equipment with an adjustment of 40% of new value to indicate a mix of new and used equipment. 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 \$1.09 and \$1.49, respectively.

The equipment listed in Tables 6 and 7 indicate only that equipment which is used in the wild rice enterprise and does not necessarily include all of the equipment that would be found on a typical farm growing wild rice.

**Table Values.** Due to rounding, the totals may be slightly different from the sum of the components.

## REFERENCES

- American Society of Agricultural Engineers. 1994. *American Society of Agricultural Engineers Standards Yearbook*. Russell H. Hahn and Evelyn E. Rosentreter (ed.) St. Joseph, Missouri. 41st edition.
- Boelje, Michael D., and Vernon R. Eidman. 1984. *Farm Management*. John Wiley and Sons. New York, New York
- Blank, Steve, Karen Klonsky, Kim Norris, and Steve Orloff. 1992. *Acquiring alfalfa hay equipment: A financial analysis of alternatives*. University of California. Oakland, California. Giannini Information Series No. 92-1.
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Table 1.

U.C. COOPERATIVE EXTENSION  
 COST PER ACRE TO ESTABLISH WILD RICE  
 INTERMOUNTAIN REGION  
 SHASTA & LASSEN COUNTIES -2000

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per Acre					Total Cost	Your Cost
		*Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent			
<b>Pre-plant:</b>								
Disc 2X	0.33	4.06	5.61	0.00	0.00	10		
Land Leveling + Borders	0.00	0.00	0.00	0.00	250.00	250		
Install Boxes 1 Box/10 acres	0.50	6.91	1.26	15.00	0.00	23		
Fertilize 120 lb N/ac Urea	0.17	2.05	0.96	26.16	0.00	29		
Disc 1X - Roughen Seedbed	0.18	2.15	2.86	0.00	0.00	5		
Fertilize 10 lbs Zn/ac	0.17	2.05	0.96	14.00	0.00	17		
Fertilize Gypsum 500 lb/ac	0.00	0.00	0.00	9.00	7.00	16		
<b>TOTAL PRE-PLANT COSTS</b>	<b>1.34</b>	<b>17.22</b>	<b>11.64</b>	<b>64.16</b>	<b>257.00</b>	<b>350</b>		
<b>Cultural:</b>								
Flood & Maintain Water	0.75	6.03	0.00	42.24	0.00	48		
Seed	0.13	1.53	0.71	75.00	0.00	77		
Roll Seedbed Post plant	0.18	2.20	0.66	0.00	0.00	3		
Bird Control	1.50	12.06	0.00	48.50	5.00	66		
Algae Control 50% of acres	0.00	0.00	0.00	4.00	3.00	7		
Midge Control 75% of acres	0.00	0.00	0.00	4.69	4.50	9		
ATV for general use	0.45	5.50	0.64	0.00	0.00	6		
<b>TOTAL CULTURAL COSTS</b>	<b>3.01</b>	<b>27.31</b>	<b>2.00</b>	<b>174.43</b>	<b>12.50</b>	<b>216</b>		
<b>Harvest:</b>								
Combine Rice	0.00	0.00	0.00	0.00	85.00	85		
Haul To Coop	0.25	3.05	1.30	0.00	0.00	4		
<b>TOTAL HARVEST COSTS</b>	<b>0.25</b>	<b>3.05</b>	<b>1.30</b>	<b>0.00</b>	<b>85.00</b>	<b>89</b>		
<b>Post-Harvest:</b>								
Disc Stubble 2X	0.33	4.06	5.61	0.00	0.00	10		
Weed Control 10% acres	0.11	1.32	0.17	1.08	0.00	3		
Flood Wet/Seal Field	0.25	2.01	0.00	3.84	0.00	6		
<b>TOTAL POST-HARVEST COSTS</b>	<b>0.69</b>	<b>7.39</b>	<b>5.78</b>	<b>4.92</b>	<b>0.00</b>	<b>18</b>		
Interest on operating capital @ 10.71%						22		
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>54.97</b>	<b>20.73</b>	<b>243.51</b>	<b>354.50</b>	<b>696</b>		
<b>CASH OVERHEAD:</b>								
Land Rent						100		
Office Expense						30		
WR Marketing Order						8		
Coop Annual Fee						1		
Liability Insurance						1		
Coop Membership Fee						63		
Farm Manager						80		
Pickup-Lease for Farm Manager						24		
Property Taxes						1		
Property Insurance						1		
Investment Repairs						1		
<b>TOTAL CASH OVERHEAD COSTS</b>						<b>310</b>		
<b>TOTAL CASH COSTS/ACRE</b>						<b>1,006</b>		
<b>NON-CASH OVERHEAD:</b>								
		Per producing Acre		Annual Cost Capital Recovery				
Investment								
Shop Building		80.00		6.50		7		
Shop Tools		20.00		1.90		2		
Fuel Tanks & Pumps		16.10		1.53		2		
Fuel Wagon		3.00		0.41		0		
Equipment		117.43		13.93		14		
<b>TOTAL NON-CASH OVERHEAD</b>		<b>236.53</b>		<b>24.26</b>		<b>24</b>		
<b>TOTAL COSTS/ACRE</b>						<b>1,030</b>		

\*\$10.18/hr machine, \$8.04/hr non-machine. See text for breakdown

Table 2.

U.C. COOPERATIVE EXTENSION  
 COST AND RETURNS PER ACRE TO ESTABLISH WILD RICE  
 INTERMOUNTAIN REGION  
 SHASTA - LASSEN COUNTIES 2000

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>GROSS RETURNS</b>					
Wild Rice	1,400.00	lb	0.42	588.00	
<b>TOTAL GROSS RETURNS</b>				588.00	
<b>OPERATING COSTS</b>					
Custom:					
Laser Level	1.00	acre	250.00	250.00	
Ground Application - Gypsum	1.00	acre	7.00	7.00	
Air Application	1.25	acre	6.00	7.50	
USDA-Bird Control	1.00	acre	5.00	5.00	
Combine Rice	1.00	acre	85.00	85.00	
Water:					
Rice Boxes	0.10	box	150.00	15.00	
Water Pumped - River	48.00	acin	0.96	46.08	
Fertilizer:					
Urea 46-0-0	120.00	lb N	0.22	26.16	
Zinc Sulfate 36%	28.00	lb	0.50	14.00	
Gypsum	500.00	lb	0.02	9.00	
Seed:					
Seed (Franklin certified)	100.00	lb	0.75	75.00	
Bird Control:					
Shotgun Shells	12.00	box	3.25	39.00	
Bird Screammers	0.50	box	19.00	9.50	
Algicide:					
Copper Sulfate	5.00	lb	0.80	4.00	
Insecticide:					
Malathion 55	1.50	pt	3.12	4.69	
Herbicide:					
Roundup	0.20	pt	5.40	1.08	
Labor (machine)	3.35	hrs	10.18	34.07	
Labor (non-machine)	2.60	hrs	8.04	20.90	
Fuel - Gas	0.37	gal	1.49	0.55	
Fuel - Diesel	11.06	gal	1.09	12.05	
Lube				1.89	
Machinery repair				6.24	
Interest on operating capital @ 10.71%				22.10	
<b>TOTAL OPERATING COSTS/ACRE</b>				695.81	
<b>NET RETURNS ABOVE OPERATING COSTS</b>				-107.81	

U.C. COOPERATIVE EXTENSION  
Table 2. continued

<b>CASH OVERHEAD COSTS:</b>	
Land Rent	100.00
Office Expense	30.00
WR Marketing Order	8.00
Coop Annual Fee	1.00
Liability Insurance	1.37
Coop Membership Fee	62.50
Farm Manager	80.40
Pickup-Lease for Farm Manager	24.00
Property Taxes	1.30
Property Insurance	0.94
Investment Repairs	0.75
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>	<b>310.26</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>1,006.07</b>
<b>INCOME/ACRE FROM PRODUCTION</b>	<b>588.00</b>
<b>ACCUMULATED NET CASH COSTS/ACRE</b>	<b>418.07</b>
<b>NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY)</b>	
Shop Building	6.50
Shop Tools	1.90
Fuel Tanks & Pumps	1.53
Fuel Wagon	0.41
Equipment	13.93
<b>TOTAL NON-CASH OVERHEAD COSTS/ACRE</b>	<b>24.26</b>
<b>TOTAL COSTS/ACRE</b>	<b>1,030.33</b>
<b>NET RETURNS ABOVE TOTAL COSTS</b>	<b>-442.33</b>

Table 3.

U.C. COOPERATIVE EXTENSION  
 COSTS PER ACRE TO PRODUCE WILD RICE  
 INTERMOUNTAIN REGION  
 SHASTA - LASSEN COUNTIES 2000

Operation	Operation	Cash and Labor Costs per Acre					Total Cost	Your Cost
	Time (Hrs/A)	Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom/ Rent			
<b>Cultural:</b>								
Fertilize 40 lb N/Urea 3X	0.00	0.00	0.00	26.16	18.27	44		
Weed Control Borders 10% acres	0.11	1.32	0.24	2.16	0.00	4		
Border Maintenance/Repairs	0.10	1.22	0.25	0.00	0.00	1		
Flood & Maintain Water	0.75	6.03	0.00	42.24	0.00	48		
Bird Control-Zon Guns-Labor	0.10	0.80	0.00	0.31	0.00	1		
Bird Control-Shotgun	1.50	12.06	0.00	48.50	5.00	66		
Algae Control 50% of acres	0.00	0.00	0.00	4.00	3.00	7		
Tissue Samples	.10	.80	0.00	0.00	1.00	2		
ATV for general use	0.45	5.50	0.64	0.00	0.00	6		
<b>TOTAL CULTURAL COSTS</b>	<b>3.11</b>	<b>27.74</b>	<b>1.13</b>	<b>123.37</b>	<b>27.27</b>	<b>180</b>		
<b>Harvest:</b>								
Combine Rice	0.00	0.00	0.00	0.00	85.00	85		
Haul To Coop	0.25	3.05	1.30	0.00	0.00	4		
<b>TOTAL HARVEST COSTS</b>	<b>0.25</b>	<b>3.05</b>	<b>1.30</b>	<b>0.00</b>	<b>85.00</b>	<b>89</b>		
<b>Post-Harvest:</b>								
Disc Stubble	0.33	4.06	5.61	0.00	0.00	10		
Weed Control Borders 10% acres	0.11	1.32	0.24	2.16	0.00	4		
Flood Wet/Seal Field	0.25	2.01	0.00	3.84	0.00	6		
<b>TOTAL POST-HARVEST COSTS</b>	<b>0.69</b>	<b>7.39</b>	<b>5.84</b>	<b>6.00</b>	<b>0.00</b>	<b>19</b>		
Interest on operating capital @ 10.71%						5		
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>38.18</b>	<b>8.27</b>	<b>129.37</b>	<b>112.27</b>	<b>293</b>		
<b>CASH OVERHEAD:</b>								
Land Rent						100		
Office Expense						30		
WR Marketing Order						8		
Coop Annual Fee						1		
Liability Insurance						1		
Farm Manager						80		
Pickup-Lease for Farm Manager						24		
Property Taxes						1		
Property Insurance						1		
Investment Repairs						1		
<b>TOTAL CASH OVERHEAD COSTS</b>						<b>248</b>		
<b>TOTAL CASH COSTS/ACRE</b>						<b>541</b>		
<b>NON-CASH OVERHEAD:</b>								
		Per producing Acre		Annual Cost Capital Recovery				
Investment								
Shop Building		80.00		6.50		7		
Shop Tools		20.00		1.90		2		
Fuel Tanks & Pumps		16.10		1.53		2		
Fuel Wagon		3.00		0.41		0		
Zon Guns 4		5.00		1.22		1		
Establishment Cost		418.07		123.65		124		
Rice Bins (8)		42.50		6.07		6		
Equipment		54.14		6.38		6		
<b>TOTAL NON-CASH OVERHEAD COSTS</b>		<b>638.81</b>		<b>147.66</b>		<b>148</b>		
<b>TOTAL COSTS/ACRE</b>						<b>688</b>		

Table 4.

U.C. COOPERATIVE EXTENSION  
 COSTS AND RETURNS PER ACRE TO PRODUCE WILD RICE  
 INTERMOUNTAIN REGION  
 SHASTA - LASSEN COUNTIES 2000

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>GROSS RETURNS</b>					
Wild Rice	1,600.00	lb	0.42	672.00	
<b>TOTAL GROSS RETURNS</b>				672.00	
<b>OPERATING COSTS</b>					
Fertilizer:					
Urea 46-0-0	120.00	lb N	0.22	26.16	
Custom:					
Air Application - Urea	261.00	lb	.07	18.27	
Air Application - Copper	0.50	acre	6.00	3.00	
Tissue Analysis	1.00	acre	1.00	1.00	
USDA-Bird Control	1.00	acre	5.00	5.00	
Combine Rice	1.00	acre	85.00	85.00	
Herbicide:					
Roundup	.80	pt	5.40	4.32	
Water:					
Water Pumped River	48.00	acin	0.96	46.08	
Bird Control:					
Shotgun Shells	12.00	box	3.25	39.00	
Bird Screammers	0.50	box	19.00	9.50	
Propane - Zon Guns	.25	gal	1.25	0.31	
Algicide:					
Copper Sulfate	5.00	lb	0.80	4.00	
Labor (machine)	1.62	hrs	10.18	16.47	
Labor (non-machine)	2.70	hrs	8.04	21.71	
Fuel - Gas	0.44	gal	1.49	0.66	
Fuel - Diesel	4.25	gal	1.09	4.63	
Lube				0.79	
Machinery repair				2.19	
Interest on operating capital @ 10.71%				4.78	
<b>TOTAL OPERATING COSTS/ACRE</b>				292.86	
<b>NET RETURNS ABOVE OPERATING COSTS</b>				379.14	
<b>CASH OVERHEAD COSTS:</b>					
Land Rent				100.00	
Office Expense				30.00	
WR Marketing Order				8.00	
Coop Annual Fee				1.00	
Liability Insurance				1.37	
Farm Manager				80.40	
Pickup-Lease for Farm Manager				24.00	
Property Taxes				1.15	
Property Insurance				0.83	
Investment Repairs				1.00	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>				247.75	
<b>TOTAL CASH COSTS/ACRE</b>				540.62	
<b>NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY)</b>					
Shop Building				6.50	
Shop Tools				1.90	
Fuel Tanks & Pumps				1.53	
Fuel Wagon				0.41	
Zon Guns (4)				1.22	
Establishment Cost				123.65	
Rice Bins (8)				6.07	
Equipment				6.38	
<b>TOTAL NON-CASH OVERHEAD COST/ACRE</b>				147.66	
<b>TOTAL COSTS/ACRE</b>				688.27	
<b>NET RETURNS ABOVE TOTAL COSTS</b>				-16.27	

Table 5.

U.C. COOPERATIVE EXTENSION  
MONTHLY CAST COSTS PER ACRE TO PRODUCE WILD RICE  
INTERMOUNTAIN REGION  
SHASTA - LASSEN COUNTIES 2000

Beginning JAN 00	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC 00	00	00	00	00	00	00	00	00	00	00	00	00	
Cultural:													
Fertilize 40 lb N/Urea 3X					15	15	15						44
Weed Control Borders 10%				4									4
Border Maintenance/Repair				1									1
Flood & Maintain Water					15	14	14	6					48
Bird Control-Zon Guns-Labor					1								1
Bird Control					11		30	25					66
Algae Control 50% of acre						7							7
Tissue (leaf) Samples/Analysis							2						2
ATV for general use				1	1	1	1	1	1				6
<b>TOTAL CULTURAL COSTS</b>				6	43	36	61	32	1				180
Harvest:													
Combine Rice								85					85
Haul To Coop								4					4
<b>TOTAL HARVEST COSTS</b>								89					89
Post-Harvest:													
Disc Stubble									10				10
Weed Control Borders 10%									4				4
Flood Wet/Seal Field									6				6
<b>TOTAL POST-HVST COSTS</b>									19				19
Interest on oper. capital				0	0	1	1	2	0				5
<b>TOTAL OPERATING COSTS/ACRE</b>				6	43	37	63	124	20				293
OVERHEAD:													
Land Rent									100				100
Office Expense				5	5	5	5	5	5				30
WR Marketing Order									8				8
Coop Annual Fee									1				1
Liability Insurance	1												1
Farm Manager	7	7	7	7	7	7	7	7	7	7	7	7	80
Pickup-Lease for Farm Manager	2	2	2	2	2	2	2	2	2	2	2	2	24
Property Taxes	1						1						1
Property Insurance	0						0						1
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>TOTAL CASH OVERHEAD COSTS</b>	11	9	9	14	14	14	15	14	123	9	9	9	248
<b>TOTAL CASH COSTS/ACRE</b>	11	9	9	20	57	51	78	138	143	9	9	9	541

Table 6.

U.C. COOPERATIVE EXTENSION  
 WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS  
 INTERMOUNTAIN REGION - SHASTA-LASSEN COUNTIES 2000  
 ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
00	165hp 4WD Tractor	98,862	12	24,717	11,125	447	618	12,189
00	42hp 2WD Tractor*	19,928	12	4,982	2,242	90	125	2457
00	ATV 400 Kawasaki	5,576	7	2,115	794	28	38	860
00	ATV 100g Sprayer/boom	4505	10	797	586	19	27	632
00	Backhoe	25,000	10	4,421	3,254	106	147	3,507
00	Disc Stubble 14'	18,000	12	2,493	2,137	74	102	2,314
00	Disc Finish 14'*	12,000	12	1,662	1,425	49	68	1,543
00	Ring Roller 10'*	2,100	10	371	273	9	12	295
00	Spreader - Spinner*	8,687	10	1,536	1,131	37	51	1,219
00	Truck 2.5ton 2WD	23,595	15	4,594	2,422	102	141	2,665
TOTAL		218,523		44,756	25,518	950	1,315	27,784
40% of New Cost **		87,301		17,902	10,207	380	526	11,114

\*Used in establishment year only

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

## ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT								
Establishment Cost	33,446	4		9,892	0	0	0	9,892
Fuel Tanks & Pumps	8,050	20		765	29	40	125	959
Fuel Wagon	1,500	10	150	204	6	8	50	268
Rice Bins (8)	3,400	10		486	12	17	0	515
Shop Building	40,000	30		3,249	145	200	100	3,694
Shop Tools	10,000	20		950	36	50	100	1,136
Zon Guns (4)	1,000	5		244	4	5	50	303
TOTAL INVESTMENT	97,393		150	15,790	232	321	425	16,767

## ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Coop Annual Fee	80	acre	1	80
Farm Manager	500	acre	80	40,200
Pickup-Lease Mgr	500	acre	24	12,000
Land Rent	80	acre	100	8,000
Liability Insurance	500	acre	1	685
Office Expense	500	acre	30	15,000
WR Marketing Order	80	acre	8	640

Table 7.

U.C. COOPERATIVE EXTENSION  
 HOURLY EQUIPMENT COSTS  
 INTERMOUNTAIN REGION  
 SHASTA - LASSEN COUNTIES 2000

		COSTS PER HOUR							
		Actual	Cash Overhead			Operating			
Yr	Description	Hours Used	Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
00	165hp 4WD Tractor	1,279.20	3.48	0.14	0.19	1.64	12.00	13.64	17.46
00	ATV 400 Kawasaki	285.30	1.11	0.03	0.05	0.27	1.14	1.41	2.49
00	ATV 50g Spryr/boom	150.30	1.56	0.04	0.07	0.80	0.00	0.80	2.62
00	Backhoe	258.00	5.04	0.16	0.23	2.52	0.00	2.52	7.96
00	Disc Stubble 16'	165.60	5.07	0.19	0.26	1.88	0.00	1.88	7.56
00	Truck 2.5ton 2WD	133.00	7.28	0.31	0.42	1.44	3.76	5.20	13.22



Table 8.

U.C. COOPERATIVE EXTENSION  
RANGING ANALYSIS  
INTERMOUNTAIN REGION  
SHASTA-LASSEN COUNTIES 2000

	YIELD (LB/ACRE)						
	1,000	1,200	1,400	1,600	1,800	2,000	2,200
<b>OPERATING COSTS/ACRE:</b>							
Cultural Cost	180	180	180	180	180	180	180
Harvest Cost	85	87	88	89	91	92	93
Post-Harvest Cost	19	19	19	19	19	19	19
Interest on operating capital	5	5	5	5	5	5	5
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>289</b>	<b>290</b>	<b>292</b>	<b>293</b>	<b>294</b>	<b>296</b>	<b>297</b>
<b>TOTAL OPERATING COSTS/LB</b>	<b>0.29</b>	<b>0.24</b>	<b>0.21</b>	<b>0.18</b>	<b>0.16</b>	<b>0.15</b>	<b>0.13</b>
<b>CASH OVERHEAD COSTS/ACRE</b>	<b>248</b>	<b>248</b>	<b>248</b>	<b>248</b>	<b>248</b>	<b>248</b>	<b>248</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>537</b>	<b>538</b>	<b>539</b>	<b>541</b>	<b>542</b>	<b>543</b>	<b>545</b>
<b>TOTAL CASH COSTS/LB</b>	<b>0.54</b>	<b>0.45</b>	<b>0.39</b>	<b>0.34</b>	<b>0.30</b>	<b>0.27</b>	<b>0.25</b>
<b>NON-CASH OVERHEAD COSTS/ACRE</b>	<b>147</b>	<b>147</b>	<b>147</b>	<b>148</b>	<b>148</b>	<b>148</b>	<b>148</b>
<b>TOTAL COSTS/ACRE</b>	<b>684</b>	<b>685</b>	<b>687</b>	<b>688</b>	<b>690</b>	<b>691</b>	<b>693</b>
<b>TOTAL COSTS/LB</b>	<b>0.68</b>	<b>0.57</b>	<b>0.49</b>	<b>0.43</b>	<b>0.38</b>	<b>0.35</b>	<b>0.31</b>

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR WILD RICE

PRICE (DOLLARS/LB)	YIELD LB/ACRE						
	1,000	1,200	1,400	1,600	1,800	2,000	2,200
Wild Rice							
0.32	31	94	156	219	282	344	407
0.37	81	154	226	299	372	444	517
0.42	131	214	296	379	462	544	627
0.47	181	274	366	459	552	644	737
0.52	231	334	436	539	642	744	847
0.57	281	394	506	619	732	844	957
0.62	331	454	576	699	822	944	1,067

NET RETURNS PER ACRE ABOVE CASH COSTS FOR WILD RICE

PRICE (DOLLARS/LB)	YIELD LB/ACRE						
	1,000	1,200	1,400	1,600	1,800	2,000	2,200
Wild Rice							
0.32	-217	-154	-91	-29	34	97	159
0.37	-167	-94	-21	51	124	197	269
0.42	-117	-34	49	131	214	297	379
0.47	-67	26	119	211	304	397	489
0.52	-17	86	189	291	394	497	599
0.57	33	146	259	371	484	597	709
0.62	83	206	329	451	574	697	819

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR WILD RICE

PRICE (DOLLARS/LB)	YIELD LB/ACRE						
	1,000	1,200	1,400	1,600	1,800	2,000	2,200
Wild Rice							
0.32	-364	-301	-239	-176	-114	-51	11
0.37	-314	-241	-169	-96	-24	49	121
0.42	-264	-181	-99	-16	66	149	231
0.47	-214	-121	-29	64	156	249	341
0.52	-164	-61	41	144	246	349	451
0.57	-114	-1	111	224	336	449	561
0.62	-64	59	181	304	426	549	671

Table 9.

U.C. COOPERATIVE EXTENSION  
 COSTS AND RETURNS/ BREAKEVEN ANALYSIS  
 INTERMOUNTAIN REGION  
 SHASTA - LASSEN COUNTIES 2000

COSTS AND RETURNS - PER ACRE BASIS

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Wild Rice	672	293	379	541	131	688	-16

COST AND RETURNS - TOTAL ACREAGE

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Wild Rice	53,760	23,429	30,331	43,249	10,511	55,062	-1,302
TOTAL	53,760	23,429	30,331	43,249	10,511	55,062	-1,302

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	Breakeven Price to Cover		
			Operating Costs	Cash Costs	Total Costs
\$ per Yield Unit					
Wild Rice	1,600.00	lb	0.18	0.34	0.43

BREAKEVEN YIELD PER ACRE

CROP	Base Price (\$/Unit)	Yield Units	Breakeven Yield to Cover		
			Operating Costs	Cash Costs	Total Costs
Yield Units/Acre					
Wild Rice	0.42	lb	697.30	1,287.20	1,638.70