1992
U.C. COOPERATIVE EXTENSION
SAMPLE COSTS TO PRODUCE ORGANIC RICE
Water Seeded
IN THE SACRAMENTO VALLEY

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The detailed costs for organic rice production in the Sacramento Valley are presented in this study. The hypothetical farm used in this report consists of 600 acres of which 300 acres are in rice production in any given year. The remainder of land is planted to a cover crop.

The practices described in this cost study are common for this crop and area. Sample costs given for labor, materials, equipment and contract services are based on current figures. The use of trade names is not an endorsement or a recommendation. Some costs and practices detailed in this study may not be applicable to your situation. A blank **Your Cost** column is provided to enter your actual costs on **Table 1**, **Costs Per Acre To Produce Vetch** and **Table 2, Detail Of Costs Per Acre To Produce Vetch.** A blank **Your Cost** column is also provided to enter your actual costs on **Table 4, Costs Per Acre To Produce Organic Rice** and **Table 5, Detail Of Costs Per Acre to Produce Organic Rice.** 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 an **Overview of Organic Rice Production**, **Assumptions for Producing Organic Rice** and nine tables.

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) 752-3563 or call the farm advisor in the county of interest.

OVERVIEW OF ORGANIC RICE PRODUCTION IN THE SACRAMENTO VALLEY

Introduction:

This study reflects the practices and costs associated with an intensive production system for organically grown rice. Total farm size is 600 acres. Each year one rice crop is grown on 300 acres, while the remaining 300 acres are planted to a cover crop for rotation and fertility purposes. It is significant that growers total yearly returns are based on utilizing half their available land base. This management decision requires a financial commitment during years of transition from conventional to organic production as well as in years when yields and returns fluctuate. Rice produced in transition years cannot be sold as organic and therefore cannot take advantage of potential organic pricing premiums. Pricing premiums for organic commodities are dependent on market demand as well as the amount of production in any given year and are fragile in nature.

Risk:

The risks associated with organic rice production should not be minimized. While this study makes every effort to model a production system based on real world practices, it cannot fully represent financial, yield and market risks which affect the profitability and economic viability of organically grown commodities.

In organic rice production, yields can vary substantially from year to year and field to field. Depending on growing conditions, yields of organic rice can range from 12 cwt (hundredweight) to 80 cwt per acre on a dry weight basis. Average yields of organically grown rice are generally less than that of conventionally grown rice.

Fewer total acres are planted to organic rice in the Sacramento Valley than that of conventionally grown rice. Because of this, organic rice production is not considered standard practice and can be considered a specialty crop. Access to a market is therefore crucial to the success of the enterprise. A marketing strategy should be formulated and contract be secured before an organic rice enterprise is undertaken.

Production Practices:

Variation in production practices exists among growers of organic rice. Practices utilized are those which are most effective in individual situations. There are two representative methods of growing organic rice in the Sacramento Valley. They are: (1) *water seeded*, and (2) *no-till drill seeded*. Differences in the two methods occur in operations and costs incurred for land preparation and each rice planting.

In method #1, *water sown rice*, costs are incurred for additional discing of fields and preparation of the final seedbed. Levees are pulled, and fields are flooded with approximately 6" of water prior to seed being flown on. A seeding rate of 150 pounds per acre is used. A third discing may be necessary every third year depending on the density of the vetch crop and weeds. Costs for the third discing are not included in this report.

In method #2, *no-till drilled seed*, after the vetch cover crop is chopped, rice seed is drilled directly into the vetch residue. This residue acts as a mulch for shade and weed control. A seeding rate of 135 pounds per acre is used. Rental costs of $10.50 per acre for a non-tillage drill are added. Levees are pulled after seeding takes place. If the soil profile has insufficient moisture for seed germination and stand establishment, fields must be flushed once or twice with 3-4" of water prior to permanent flooding.

In both methods laser leveling occurs in one out of every four years. Land planing occurs in the other three years.

Variation in total water usage between methods #1 and #2 is negligible. Water costs are included at $35 per acre. This figure is within a range of use and costs for this production region. Water costs can vary substantially and are dependent on the use of district (surface) or pumped (well) water.

Harvest operations are identical in both methods. Typically after harvest, rice straw is left to decompose in fields in years when a cover crop is grown. Depending on soil conditions and the practices of individual growers, some incorporation of rice straw using corrugated rollers or discs may be done.

Cover Crops and Rotations:

An integral component of organic rice production is rotation to a cover crop. The predominant cover crop used is purple vetch. Other species such as woollypod vetch and common vetch are occasionally planted. The cover crop is grown to provide nitrogen for crop production and return organic matter to soils. These additions can benefit the subsequent crop as well as provide a long-term contribution to soil quality. Cover crops can also be harvested for seed.

Depending on field conditions, vetch seed can be drilled or flown on in the fall after the rice harvest. Seed can be drilled in years when fields are dry enough to support farm equipment. Seed can also be flown on in dry years. In either case, fields are disced to cover the seed and to help incorporate the rice stubble. Grower experience indicates that this discing can enhance cover crop establishment. In years when ground is wet and cannot be worked with farm machinery, vetch seed is flown on. No discing occurs to cover the seed or to incorporate the rice stubble. In this study, vetch seed is assumed to be flown onto fields which cannot be worked. Costs for discing are therefore not included in this report.

Vetch germination and growth is dependent on fall and winter rains. This report assumes that the cover crop is not irrigated. Vetch growth continues through the spring when flowering and seed set occurs. Seed is harvested in the summer. During harvest, the vetch cover crop reseeds itself as pods shatter and seeds are scattered across the field. Additional vetch seed may be planted in the fall of the second year if the seed distribution or germination was poor. The costs of this study reflect one vetch planting only. The second (self-reseeded) vetch crop is allowed to grow only through the spring when it is chopped and incorporated into the soil (*water sown*) or just chopped, and left as residue on the surface (*no-till drilled seed*). Rice is then planted in the spring and harvested the next October. Please see **Figure A (*Figure A is not available online)*** at the end of this section for a schematic representation of a typical rice-purple vetch two year rotation.

Historically, purple vetch was grown for seed in rotation with rice to satisfy an export market. Although an export market for vetch seed no longer exists, purple vetch continues to be grown on some rice lands, largely due to increased interest in cover and green manure crops. Vetch harvests generally yield an average of 600 pounds of seed per acre. In this study, only 60 pounds of vetch seed is used on-farm for planting vetch in year one of the two year rotation. Clean or field-run vetch seed in excess of growers needs can be sold for additional income, however, is not shown as revenue in this study. Although there is a fairly consistent market for vetch seed, price can fluctuate depending on supply. Prices for vetch seed to growers currently range anywhere from $0.25 to $0.50 per pound.

Although the use of purple vetch as a winter annual cover crop is common among growers of organic rice, it is not the only option. Growers in some areas may find that this particular cover crop is not appropriate to their soils and conditions and may choose to plant a different nitrogen fixing crop. These can include bell beans and some clovers. While these cover crops add organic matter and nitrogen to soils, they are not necessarily suited to seed production and may be incorporated each spring prior to planting a cash crop. Alternatively, manures can be applied in the spring prior to planting to increase nutrient availability for rice production, particularly on ground without sufficient fertility. Poultry manures are typically used. Composting of manures is suggested to destroy weed seeds. Contact your local farm advisor for specific advice in your area.

In some areas of the Sacramento Valley, crop rotations in organic rice production include both a cover crop and an alternate cash crop. Yellow corn, popcorn, oats, wheat, beans and processing tomatoes are some of the crops that can be grown in alternate years between spring-incorporated and fall-planted cover crops.

Diversification of crops can reduce economic risks, make full use of nutrients throughout the soil profile and control certain pests. The major considerations for farmers in choosing to rotate crops are: (1) the timing and compatibility of the alternate crop's growing season with rice and the cover crop, (2) the equipment requirements of the alternate crop, and (3) the feasibility of growing the alternate crop organically, both in terms of production practices and finding a market for the commodity.

Pest Management:

Pesticides that are currently employed by conventional rice growers are not used by certified producers of organic rice. However, certain materials with pesticidal properties may be used in organic rice production. An example of this is the use of copper sulfate for algae control. In this study the incidence of disease, as well as vertebrate and invertebrate pest damage is assumed to be low enough that no specific control action is taken. Individual situations may vary. Weed control presents the greatest challenge to growers of organic rice. Ground that does not have a history of rice production may escape large weed populations initially. While the interval between rice crops assists in breaking the cycle of pests in general, broadleaf weeds, water grasses and sedges are all problems with long term organic rice production. Some techniques to control weeds are:

1. Summer flood to sprout grass and aquatic weed seeds. Subsequent cultivations and winter frosts decrease weed incidence.
2. Screen weed seeds from ditch irrigation water. This may not be practical in all situations.
3. Compost any manures used in production.
4. Hold deep water (7-8") to control the grasses and some sedges such as smallflower umbrellaplant. Monitoring is necessary for optimum seedling establishment.
5. Use sheep to graze weeds in levee areas. Fence rental or purchase will be necessary.
6. Sanitize equipment when moving from field to field.
7. Rotation of crops in alternate years.

To further alleviate weed pressure, growers can vary production practices between *water seeded* and *no-till drill seeded* rice to control specific weeds that are prevalent in each method. For example, rice field bulrush may be suppressed by *drill seeding*; grasses in *water seeding* by deep water management. Although eradication is generally not possible, many techniques can lessen the impact of weeds.

Regulations of Organically Grown Commodities:

As of January 1, 1992 all growers of organic commodities must register on a yearly basis with the State of California under the California Organic Foods Act of 1990, AB 2012. Enforced under this act are the provisions of Article 4.5 (commencing with Section 26569.20) of Chapter 5 of Division 21 of the California Health and Safety Code. These provisions contain rules and regulations which must be adhered to by all producers and handlers of organic commodities.

Registration fees are levied by the State of California and are based on the previous year's gross sales. These fees are payable before any sales of the commodity occur. In this study a stepped scale fee of $450 is assessed on a gross sales amount of $262,500. This is calculated by multiplying a yield of 50 cwt per acre by a price of $17.50 per cwt and the number of rice producing acres (300). This is only an estimate of potential fees and will vary depending on yields and returns. Contact the County Agricultural Commissioner in your area for further details.

In addition to state registration, some growers may choose to be certified by a third party organic certification agency. Third party agencies were formed to set forth and monitor standards for organic production. Before state laws began to govern organic commodities, third party agencies were often the only means to verify that products were, in fact, organically grown. California Certified Organic Farmers (CCOF) is one of a number of third party organizations in the United States and is not the only option for certification within the State of California. Differences between organizations may occur in the certification process,

associated costs, standards and procedures. Farm advisors in your area of interest may be able to provide additional information or assistance.

This study assumes that growers participate in, and are certified by, CCOF. CCOF adheres to the standards of the California Organic Foods Act of 1990 as well as its own specific procedures and standards. Certification by CCOF is voluntary. Before January 1, 1992, CCOF required a one year certification transition period when converting from conventional production practices to organically acceptable methods. The requirement is now three years. Annual membership, inspection and assessment fees are charged as cash overhead costs. Annual membership fees in this study are $175. Inspection fees are $100. An assessment fee of 0.5% of gross sales, or $1,313, is also shown as a cash overhead cost. These fees are specific to this study and will vary depending on the number of acres and parcels contained in an operation as well as whether or not the farm is totally organic. For information on each individual situation, refer to CCOF's current Certification Handbook.

Government Programs:

Federal farm programs under the 1990 Farm Bill may warrant consideration by individual growers of organic rice. These programs may provide benefits and coincide with the management and production practices of an intensive organic rice system. Income from government programs is not included in this study. However, the two year rotation facilitates participation by allowing growers to meet the diverted acreage requirement. Participation in the programs will require research and decision making on the part of individual growers. Contact the Agricultural Stabilization and Conservation Service (ASCS) for inquiries.

ASSUMPTIONS FOR PRODUCING ORGANIC RICE
Sacramento Valley - 1992
U.C. Cooperative Extension

The following is a description of some general assumptions pertaining to sample costs of organic rice production in selected counties of Northern California. These costs are represented on a per acre basis.

1. LAND:

This cost of production study is based on a 600 acre organic rice operation which in any given year devotes 300 acres solely to producing rice. The remainder of land is planted to a cover crop for rotation and fertility purposes. Land in this study is owned by the grower and is valued at $2,000 per acre. Land is not depreciated.

2. CULTURAL PRACTICES:

Cultural practices for the production of organic rice vary from grower to grower and region to region. The practices and inputs used in this cost study serve only as a sample or guide. Two representative methods for organic rice production occur in the Sacramento Valley. They are: (1) *water seeded*, and (2)*no-till drill seeded*.

In method #1, *water sown rice*, costs are incurred for additional discing of fields and preparation of the final seedbed. Levees are pulled and fields are flooded with approximately 6" of water prior to seed being flown on. A seeding rate of 150 pounds per acre is used. A third discing may be necessary every third year depending on the density of the vetch crop and weeds. Costs for the third discing are not included in this report.

In method #2, *no-till drill seeded*, after the vetch is chopped, rice seed is drilled directly into the vetch residue. This residue acts as a mulch for shade and weed control. A seeding rate of 135 pounds per acre is used. Rental costs of $10.50 per acre for a non-tillage drill are added. Levees are pulled after seeding takes place. If the soil profile has insufficient moisture for seed germination and stand establishment, fields must be flushed once or twice with 3-4" of water prior to permanent flooding.

Variations can be significant. Please refer to the overview section of this study for additional information or contact the farm advisor in the county of interest.

3. YIELD & RETURN RANGES FOR ORGANIC RICE:

The range of yields in the production region of this study is 12 cwt (hundredweight) to 80 cwt per acre on a dry weight basis. The range of prices received by growers for organically grown rice is currently $14.50 to $20.00 per cwt. **Table 9**, the Ranging Analysis, shows net returns above operating costs, cash costs, and total costs for various price and yield levels.

Water-sown rice shows positive net returns above total costs with a minimum yield of 38 cwt per acre and a minimum price of $17.50 per cwt. At a low price of $14.50 per cwt, the breakeven yield is 47 cwt. At a high price of $20.00 per cwt, the breakeven yield is 32 cwt.

In *no-till drilled rice* , net returns above total costs are positive at yields at or above 38 cwt with a minimum price of $16.50 per cwt. At a low price of $14.50 per cwt, the breakeven yield is 44 cwt. At a high price of $20.00, the breakeven yield is 31 cwt.

Market conditions will affect these figures. No government payments are included in the returns of this study.

4. YIELD & MARKET VALUES FOR VETCH SEED:

In this study 60 pounds of vetch seed per acre is planted for the first cover crop. The second cover crop is self-reseeded. Because vetch seed is grown on-farm no value is shown. Vetch seed in excess of growers needs may provide additional income, however due to market supply and price inconsistency, is not included in this study. The price range currently received by growers is $0.25 to $0.50 per pound.

5. HARVEST:

In this cost study growers own their own harvesting equipment and perform all of their own harvest operations. The equipment for harvest operations is inventoried, and labor, fuel, repairs, depreciation, and interest on investment are calculated as a cost of production. If growers choose to contract their harvest operation, all harvest equipment and the appropriate costs should be subtracted and custom charges added to harvest costs in **Tables 4** and **6.**

6. LABOR:

Basic hourly wages for workers are $7.47 and $5.50 per hour for machine operators and field workers, respectively. Adding 34% for SDI, FICA, insurance and other benefits increases the labor rates shown to $10.00 per hour for machine labor and $7.37 per hour for non-machine labor. The labor hours for operations involving machinery are 10% higher than the machine hours to account for extra labor involved in equipment set-up, moving, maintenance and repair. Wages for managers are not included as a cash cost. Any returns above total costs are considered returns to management and risk.

7. RICE CROP INVESTMENT:

The investments shown in **Table 7** are those that are allocated to the organic rice operation. Included in annual investments is a yearly cover crop. The investment cost for the cover crop is calculated by multiplying the total cash costs per acre to produce vetch shown in **Tables 1** and **2** by 300, or the number of acres in the crop. Annual investments shown in **Tables 4** and **5** represent depreciation and opportunity cost for each investment on an annual per acre basis.

8. COVER CROP INVESTMENT:

The cost of producing a vetch cover crop is calculated in **Tables 1** and **2** and is shown as an investment allocated to the 300 acre organic rice operation in **Table 7.** These costs can be thought of indirectly as the cost of producing nitrogen and improving soil quality for the rice enterprise. This is to better reflect the actual cost of organic rice production. This investment is also shown on an annual per acre basis in **Tables 4**and **5**.

9. OVERHEAD:

County taxes are calculated as 1% of the average value of equipment, buildings and improvements. Insurance is charged at 0.5% of the average value of the equipment over its useful life. Office and business costs are estimated at $20 per acre for the farm. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road preparation and maintenance, etc.

10. INTEREST:

Interest on operating capital is based on cash costs and is calculated monthly (from October to July for vetch and from April to November for rice) until the last harvest at the rate of 9% per year. Adjustments for inflation are not included in this figure. Interest is also charged on investment at a real interest rate of 4% per year to account for income foregone that could be received from an alternative investment (opportunity cost) and is based on the average value of the buildings and equipment. The real interest rate indicates the return for the use of capital and does not include any adjustment for inflation.

11. EQUIPMENT COSTS:

In allocating the equipment costs per acre, the following calculations were made and shown in **Table 7**: (a) **Original Cost** of equipment is the cost of the new equipment plus sales tax. (b) **Depreciation** is straight line with a 10% salvage value. (c) **Interest** on investment is calculated as the average value per acre of the equipment during its useful life multiplied by a real interest rate of 4%. Average value per acre equals new cost plus salvage value divided by 2 divided by the number of acres. (d) The **Total Investment Costs** are calculated as 40% of the depreciation and the interest costs for all new equipment to reflect a mix of the new and used equipment. These values are also used in **Tables 1** and **4.** All of this equipment is used on the entire 600 acre farm.

12. FUEL & REPAIR:

The fuel and repair cost per acre for each operation in **Tables 1** and **4** is determined by multiplying the total hourly operating cost for each piece of equipment in **Table 8** by the number of hours per acre for that operation. Prices for on-farm delivery of gasoline and diesel are $0.98 and $0.71 per gallon respectively.

13. ACKNOWLEDGEMENT:

Several organic rice producers assisted in furnishing information for this study. Appreciation is expressed to those growers and other individuals who provided assistance.

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U.C. COOPERATIVE EXTENSION

Table 1. COSTS PER ACRE TO PRODUCE VETCH
WATER SEEDED ORGANIC RICE

Labor Rate: $ 10.00/hr. machine labor
$ 7.37/hr. non-machine labor
Interest Rate: 9.00%
Yield per Acre: 60.00 lb

Operation	Time (Hrs/A)	Labor Cost	Fuel & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
	Operation	Cash and Labor Costs per Acre					
Cultural:							
Pull Ditches for Cover Crop	0.04	0.48	0.85	0.00	0.00	1.33	
Fly on Vetch Seed	0.00	0.00	0.00	0.00	4.50	4.50	
Harvest Vetch	0.21	2.51	7.19	0.00	0.00	9.70	
Disc 2X Incorp Vetch/Stubble	0.40	4.80	7.97	0.00	0.00	12.77	
TOTAL CULTURAL COSTS	0.65	7.79	16.01	0.00	4.50	28.30	
Interest on operating capital @ 9.00%						0.61	
TOTAL OPERATING COSTS/ACRE		7.79	16.01	0.00	4.50	28.91	

Table 2. DETAIL OF COSTS PER ACRE TO PRODUCE VETCH
WATER SEEDED ORGANIC RICE

Labor Rate: $ 10.00/hr. machine labor
$ 7.37/hr. non-machine labor
Interest Rate: 9.00%

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
OPERATING COSTS					
Seed:					
Seed - Purple Vetch	60.00	lb	0.00	0.00	
Custom:					
Air Application	1.00	acre	4.50	4.50	
Labor (machine)	0.78	hrs	10.00	7.79	
Labor (non-machine)	0.00	hrs	0.00	0.00	
Fuel - Diesel	9.81	gal	0.71	6.96	
Lube				1.04	
Machinery repair				8.01	
Interest on operating capital @ 9.00%				0.61	
TOTAL OPERATING COSTS/ACRE				28.91	

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Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE VETCH
WATER SEEDED ORGANIC RICE

Begining OCT 91 Ending SEP 92	OCT 91	NOV 91	DEC 91	JAN 92	FEB 92	MAR 92	APR 92	MAY 92	JUN 92	JUL 92	AUG 92	SEP 92	TOTAL
Cultural:													
Pull Ditches for Cover Crop	1.33												1.33
Fly on Vetch Seed	4.50												4.50
Harvest Vetch										9.70			9.70
Disc 2X Incorp Vetch/Stubble										12.77			12.77
TOTAL CULTURAL COSTS	5.83									22.47			28.30
Interest on oper. capital	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.21			0.61
TOTAL OPERATING COSTS/ACRE	5.87	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	22.69			28.91

U.C. COOPERATIVE EXTENSION

Table 4. COSTS PER ACRE TO PRODUCE ORGANIC RICE
WATER SEEDED

Labor Rate: $ 10.00/hr. machine labor
$ 7.37/hr. non-machine labor
Interest Rate: 9.00%
Yield per Acre: 50.00 cwt

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Chop Vetch	0.20	2.39	1.75	0.00	0.00	4.13	
Disc 2X - Incorp Vetch	0.40	4.80	10.17	0.00	0.00	14.97	
Laser Level 1 of 4 years	0.00	0.00	0.00	0.00	18.75	18.75	
Triplane 3 of 4 years	0.26	3.06	5.64	0.00	0.00	8.70	
Prepare Final Rice Seedbed	0.13	1.52	2.92	0.00	0.00	4.44	
Plow 5% of Ground for Levees	0.02	0.19	0.36	0.00	0.00	0.55	
Pull Levees - 5% of Acreage	0.01	0.12	0.16	0.00	0.00	0.28	
Install Rice Boxes	0.25	1.84	0.00	3.80	0.00	5.64	
Flood Fields	0.07	0.52	0.00	2.94	0.00	3.46	
Fly on Rice Seed	0.00	0.00	0.00	18.75	11.03	29.78	
Permanent Flood	1.20	8.84	0.00	32.34	0.00	41.18	
Pickup use	0.43	5.20	1.57	0.00	0.00	6.77	
TOTAL CULTURAL COSTS	2.96	28.49	22.57	57.83	29.78	138.67	
Harvest:							
Combine Rice	0.65	7.80	22.38	0.00	0.00	30.18	
Bankout Rice	0.65	7.80	0.67	0.00	0.00	8.47	
Haul to Dryer	0.00	0.00	0.00	0.00	17.00	17.00	
Dry	0.00	0.00	0.00	0.00	32.50	32.50	
Storage	0.00	0.00	0.00	0.00	27.50	27.50	
TOTAL HARVEST COSTS	1.30	15.60	23.04	0.00	77.00	115.64	
Interest on operating capital @ 9.00%						7.96	
TOTAL OPERATING COSTS/ACRE		44.09	45.61	57.83	106.78	262.27	
TOTAL OPERATING COSTS/CWT						5.25	

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ORGANIC RICE - WATER SEEDED
Table 4. continued

CASH OVERHEAD:				
Office Expense				40.00
CCOF Membership Fees				0.58
CCOF Inspection Fees				0.33
Ca. State Organic Registration Fees				1.50
CCOF .5% of Gross Sales				4.38
Property Taxes				45.32
Equipment Insurance				22.66
Investment Repairs				1.92
TOTAL CASH OVERHEAD COSTS				116.69
TOTAL CASH COSTS/ACRE				378.96
TOTAL CASH COSTS/CWT				7.58
NON-CASH OVERHEAD:	Per producing	Annual Cost		
Investment	Acre	Depreciation	Interest @ 4.00%	
Land	4000.00		160.00	160.00
Shop Building	123.33	4.11	2.47	6.58
Storage Building	25.00	0.83	0.50	1.33
Irrigation System - Rice	66.67	3.33	1.33	4.67
Fuel Tanks & Pumps	26.83	1.34	0.54	1.88
Shop Tools	33.33	1.67	0.67	2.33
Fuel Wagon - 3/4 ton	5.00	0.45	0.11	0.56
Tool Carrier 30'	40.67	1.83	0.89	2.72
Cover Crop	29.00	29.00	0.58	29.58
Equipment	644.94	75.14	14.19	89.33
TOTAL NON-CASH OVERHEAD COSTS	4994.77	117.71	181.28	298.98
TOTAL COSTS/ACRE				677.94
TOTAL COSTS/CWT				13.56

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Table 5. DETAIL OF COSTS PER ACRE TO PRODUCE ORGANIC RICE
WATER SEEDED

Labor Rate: $ 10.00/hr. machine labor Interest Rate: 9.00%
$ 7.37/hr. non-machine labor

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
OPERATING COSTS					
Custom:					
Laser Level 1 of 4 Years	0.25	acre	75.00	18.75	
Soaking - Seed	1.50	cwt	1.20	1.80	
Seed - Field Deliver	1.80	cwt	0.63	1.13	
Air Application	1.80	cwt	4.50	8.10	
Misc.:					
Rice Boxes	0.19	box	20.00	3.80	
Water:					
Water	72.00	acin	0.49	35.28	
Seed:					
Seed	1.50	cwt	12.50	18.75	
Contract:					
Haul to Dry	50.00	cwt	0.34	17.00	
Drying	50.00	cwt	0.65	32.50	
Storage	50.00	cwt	0.55	27.50	
Labor (machine)	3.29	hrs	10.00	32.88	
Labor (non-machine)	1.52	hrs	7.37	11.20	
Fuel - Diesel	27.58	gal	0.71	19.58	
Lube				2.94	
Machinery repair				23.08	
Interest on operating capital @ 9.00%				7.96	

TOTAL OPERATING COSTS/ACRE				262.27	
TOTAL OPERATING COSTS/CWT				5.25	

U.C. COOPERATIVE EXTENSION
ORGANIC RICE - WATER SEEDED
Table 5. continued

CASH OVERHEAD COSTS:	
Office Expense	40.00
CCOF Membership Fees	0.58
CCOF Inspection Fees	0.33
Ca. St. Org. Reg. Fees	1.50
CCOF .5% of Gross Sales	4.38
Property Taxes	45.32
Equipment Insurance	22.66
Investment Repairs	1.92
TOTAL CASH OVERHEAD COSTS/ACRE	116.69
TOTAL CASH COSTS/ACRE	378.96
TOTAL CASH COSTS/CWT	7.58
NON-CASH OVERHEAD COSTS (DEPRECIATION & INTEREST):	
Land	160.00
Shop Building	6.58
Storage Building	1.33
Irrigation System - Rice	4.67
Fuel Tanks & Pumps	1.88
Shop Tools	2.33
Fuel Wagon - 3/4 ton	0.56
Tool Carrier 30'	2.72
Cover Crop	29.58
Equipment	89.33
TOTAL NON-CASH OVERHEAD COSTS/ACRE	298.98
TOTAL COSTS/ACRE	677.94
TOTAL COSTS/CWT	13.56

U.C. COOPERATIVE EXTENSION

Table 6. MONTHLY CASH COSTS PER ACRE TO PRODUCE ORGANIC RICE - WATER SEEDED

Begining APR 92 Ending DEC 92	JAN 92	FEB 92	MAR 92	APR 92	MAY 92	JUN 92	JUL 92	AUG 92	SEP 92	OCT 92	NOV 92	DEC 92	TOTAL
Cultural:													
Chop Vetch				4.13									4.13
Disc 2X - Incorp Vetch				14.97									14.97
Laser Level 1 of 4 years				18.75									18.75
Triplane 3 of 4 years				8.70									8.70
Prepare Final Rice Seedbed					4.44								4.44
Plow 5% of Ground for Levees					0.55								0.55
Pull Levees - 5% of Acreage					0.28								0.28
Install Rice Boxes					5.64								5.64
Flood Fields					3.46								3.46
Fly on Rice Seed					29.78								29.78
Permanent Flood					8.24	8.24	8.24	8.24	8.24				41.18
Pickup use												6.77	6.77
TOTAL CULTURAL COSTS				46.56	52.39	8.24	8.24	8.24	8.24			6.77	138.67
Harvest:													
Combine Rice										15.09	15.09		30.18
Bankout Rice										4.23	4.23		8.47
Haul to Dryer										8.50	8.50		17.00
Dry										16.25	16.25		32.50
Storage										13.75	13.75		27.50
TOTAL HARVEST COSTS										57.82	57.82		115.64
Interest on oper. capital				0.35	0.74	0.80	0.87	0.93	0.99	1.42	1.86		7.96
TOTAL OPERATING COSTS/ACRE				46.91	53.14	9.04	9.10	9.16	9.23	59.24	59.68	6.77	262.27
TOTAL OPERATING COSTS/CWT				0.94	1.06	0.18	0.18	0.18	0.18	1.18	1.19	0.14	5.25
OVERHEAD:													
Office Expense				4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	40.00
CCOF Membership Fees	0.58												0.58
CCOF Inspection Fees	0.33												0.33
Ca. St. Org. Reg. Fees											1.50		1.50
CCOF .5% of Gross Sales											4.38		4.38
Property Taxes				22.66								22.66	45.32
Equipment Insurance												22.66	22.66
Investment Repairs				0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	1.92
TOTAL CASH OVERHEAD COSTS	0.92			27.32	4.66	4.66	4.66	4.66	4.66	4.66	10.53	49.98	116.69
TOTAL CASH COSTS/ACRE	0.92			74.23	57.79	13.70	13.76	13.82	13.88	63.90	70.21	56.75	378.96
TOTAL CASH COSTS/CWT	0.02			1.48	1.16	0.27	0.28	0.28	0.28	1.28	1.40	1.13	7.58

U.C. COOPERATIVE EXTENSION

Table 7. ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS FOR ORGANIC RICE PRODUCTION
WATER SEEDED

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	- Non-Cash Over. - Depre-ciation	Interest	- Cash Overhead - Insur-ance	Taxes	Total
92	225HP 4WD Tractor	87400	15	5244.00	1922.80	240.35	480.70	7887.85
92	285HP - Crawler	152000	15	9120.00	3344.00	418.00	836.00	13718.00
92	90HP 2WD Tractor	43800	15	2628.00	963.60	120.45	240.90	3952.95
92	Bankout SP150 CWT	68480	6	10272.00	1506.56	188.32	376.64	12343.52
92	Chop-Shredder 15'	12000	15	720.00	264.00	33.00	66.00	1083.00
92	Combine - 18'Rice	160500	4	36112.50	3531.00	441.37	882.75	40967.62
92	Disc Ridger - 12'	7000	15	420.00	154.00	19.25	38.50	631.75
92	Disc-Offset 18'#1	26100	15	1566.00	574.20	71.77	143.55	2355.52
92	Disc-Offset 18'#2	26100	15	1566.00	574.20	71.77	143.55	2355.52
92	Pickup #1	16500	7	2121.43	363.00	45.37	90.75	2620.55
92	Plow - Moldboard	10800	15	648.00	237.60	29.70	59.40	974.70
92	Rice Roller - 18'	13200	15	792.00	290.40	36.30	72.60	1191.30
92	Triplane - 16'	17500	15	1050.00	385.00	48.13	96.25	1579.38
92	V Ditcher	4000	15	240.00	88.00	11.00	22.00	361.00
TOTAL		645380		72499.93	14198.36	1774.78	3549.59	92022.66
40% of New Cost *		258152		28999.97	5679.34	709.91	1419.84	36809.06

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

U.C. COOPERATIVE EXTENSION
ORGANIC RICE - WATER SEEDED
Table 7. continued

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	- Non-Cash Over. - Depre-ciation	Interest	------ Cash Overhead ------ Insur-ance	Taxes	Repairs	Total
INVESTMENT								
Cover Crop	8700	1	8700.00	174.00	21.75	43.50	0.00	8939.25
Fuel Tanks & Pumps	8050	20	402.50	161.00	20.13	40.25	125.00	748.88
Fuel Wagon - 3/4 ton	1500	10	135.00	33.00	4.13	8.25	50.00	230.38
Irr.System - Rice	20000	20	1000.00	400.00	50.00	100.00	0.00	1550.00
Land	1200000			48000.00	6000.00	12000.00	0.00	66000.00
Shop Building	37000	30	1233.33	740.00	92.50	185.00	100.00	2350.83
Shop Tools	10000	20	500.00	200.00	25.00	50.00	100.00	875.00
Storage Building	7500	30	250.00	150.00	18.75	37.50	100.00	556.25
Tool Carrier 30'	12200	20	549.00	268.40	33.55	67.10	100.00	1018.05
TOTAL INVESTMENT	1304950		12769.83	50126.40	6265.81	12531.60	575.00	82268.64

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Ca. St. Org. Reg. Fees	1.00	year	450.00	450.00
CCOF .5% of Gross Sales	1.00	year	1313.00	1313.00
CCOF Inspection Fees	1.00	year	100.00	100.00
CCOF Membership Fees	1.00	year	175.00	175.00
Office Expense	600.00	acre	20.00	12000.00

U.C. COOPERATIVE EXTENSION

Table 8. HOURLY EQUIPMENT COSTS FOR ORGANIC RICE PRODUCTION

WATER SEEDED

Yr	Description	Actual Hours Used	Non-Cash Over. Depreciation	Cash Overhead Interest	Insurance	Taxes	Operating Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
			COSTS PER HOUR							
92	225HP 4WD Tractor	135.3	15.50	5.68	0.71	1.42	2.91	10.66	13.57	36.89
92	285HP - Crawler	276.5	13.19	4.84	0.60	1.21	5.07	13.51	18.58	38.42
92	90HP 2WD Tractor	65.7	16.01	5.87	0.73	1.47	1.75	3.61	5.36	29.44
92	Bankout SP150 CWT	214.5	19.16	2.81	0.35	0.70	0.11	0.82	0.93	23.95
92	Chop-Shredder 15'	59.7	4.82	1.77	0.22	0.44	2.87	0.00	2.87	10.13
92	Combine - 18'Rice	283.5	50.96	4.98	0.62	1.25	19.44	11.85	31.29	89.10
92	Disc Ridger - 12'	3.0	56.00	20.53	2.57	5.13	1.34	0.00	1.34	85.57
92	Disc-Offset 18'#1	120.0	5.22	1.91	0.24	0.48	5.00	0.00	5.00	12.85
92	Disc-Offset 18'#2	120.0	5.22	1.91	0.24	0.48	5.00	0.00	5.00	12.85
92	Pickup #1	130.0	6.53	1.12	0.14	0.28	2.00	1.63	3.63	11.69
92	Plow - Moldboard	4.8	54.00	19.80	2.47	4.95	2.07	0.00	2.07	83.29
92	Rice Roller - 18'	38.1	8.31	3.05	0.38	0.76	2.53	0.00	2.53	15.04
92	Triplane - 16'	76.5	5.49	2.01	0.25	0.50	1.69	0.00	1.69	9.95
92	V Ditcher	12.0	8.00	2.93	0.37	0.73	0.76	0.00	0.76	12.80

U.C. COOPERATIVE EXTENSION

Table 9. RANGING ANALYSIS

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE ORGANIC RICE - WATER SEEDED

	YIELD (CWT/ACRE)						
	12	26	38	50	60	70	80
OPERATING COSTS/ACRE:							
Cultural Cost	139	139	139	139	139	139	139
Harvest Cost	31	62	89	116	138	160	182
Interest on operating capital	7	7	8	8	8	8	9
TOTAL OPERATING COSTS/ACRE	177	208	235	262	285	307	330
TOTAL OPERATING COSTS/CWT	14.72	8.01	6.19	5.25	4.75	4.39	4.12
CASH OVERHEAD COSTS/ACRE	116	116	117	117	117	117	117
TOTAL CASH COSTS/ACRE	293	325	352	379	402	424	447
TOTAL CASH COSTS/CWT	24.40	12.49	9.26	7.58	6.69	6.06	5.58
NON-CASH OVERHEAD COSTS/ACRE	282	292	296	299	301	302	303
TOTAL COSTS/ACRE	574	616	648	678	702	726	750
TOTAL COSTS/CWT	47.86	23.70	17.05	13.56	11.70	10.37	9.37

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR ORGANIC RICE - WATER SEEDED

PRICE	YIELD (CWT/ACRE)						
(DOLLARS PER CWT)	12	26	38	50	60	70	80
14.50	-3	169	316	463	585	708	830
15.50	9	195	354	513	645	778	910
16.50	21	221	392	563	705	848	990
17.50	33	247	430	613	765	918	1070
18.50	45	273	468	663	825	988	1150
19.50	57	299	506	713	885	1058	1230
20.00	63	312	525	738	915	1093	1270

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
Table 9. continued

NET RETURNS PER ACRE ABOVE CASH COSTS FOR ORGANIC RICE - WATER SEEDED

PRICE	YIELD (CWT/ACRE)						
(DOLLARS PER CWT)	12	26	38	50	60	70	80
14.50	-119	52	199	346	468	591	713
15.50	-107	78	237	396	528	661	793
16.50	-95	104	275	446	588	731	873
17.50	-83	130	313	496	648	801	953
18.50	-71	156	351	546	708	871	1033
19.50	-59	182	389	596	768	941	1113
20.00	-53	195	408	621	798	976	1153

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR ORGANIC RICE - WATER SEEDED

PRICE	YIELD (CWT/ACRE)						
(DOLLARS PER CWT)	12	26	38	50	60	70	80
14.50	-400	-239	-97	47	168	289	410
15.50	-388	-213	-59	97	228	359	490
16.50	-376	-187	-21	147	288	429	570
17.50	-364	-161	17	197	348	499	650
18.50	-352	-135	55	247	408	569	730
19.50	-340	-109	93	297	468	639	810
20.00	-334	-96	112	322	498	674	850