

**1992**  
**U.C. COOPERATIVE EXTENSION**  
**SAMPLE COSTS TO PRODUCE ORGANIC RICE**  
*No-Till Drill Seeded*  
**IN THE SACRAMENTO VALLEY**  
by

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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.

Table 1.	<b>Costs Per Acre To Produce Vetch</b>
Table 2.	<b>Detail Of Costs Per Acre To Produce Vetch</b>
Table 3.	<b>Monthly Cash Costs Per Acre To Produce Vetch</b>
Table 4.	<b>Costs Per Acre To Produce Organic Rice</b>
Table 5.	<b>Detail Of Costs Per Acre To Produce Organic Rice</b>
Table 6.	<b>Monthly Cash Costs Per Acre To Produce Organic Rice</b>
Table 7.	<b>Annual Equipment, Investment And Business Overhead Costs For Organic Rice Production</b>
Table 8.	<b>Hourly Equipment Costs For Organic Rice Production</b>
Table 9.	<b>Ranging Analysis</b>

For an explanation of calculations used for the study refer to the attached General Assumptions, call the Department of Agricultural Economics, Cooperative Extension, University of California, Davis, California, (530) 752-3563 or call the farm advisor in the county of interest.

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## 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  
NO-TILL DRILL SEEDED ORGANIC RICE

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

Operation	Cash and Labor Costs per Acre						Total	Your
Operation	Time (Hrs/A)	Labor Cost	Fuel & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost	
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  
NO-TILL DRILL SEEDED ORGANIC RICE

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					
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	

Table 3.

U.C. COOPERATIVE EXTENSION  
 MONTHLY CASH COSTS PER ACRE TO PRODUCE VETCH  
 NO-TILL DRILL SEEDED ORGANIC RICE

Beginning	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
OCT 91													
Ending	91	91	91	92	92	92	92	92	92	92	92	92	
-----													
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
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Table 4.

U.C. COOPERATIVE EXTENSION  
COSTS PER ACRE TO PRODUCE ORGANIC RICE  
NO-TILL DRILL SEEDED

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

Operation	Operation Time (Hrs/A)	Labor Cost	Fuel & Repairs	Material Cost	Cash and Labor Costs per Acre Custom/ Rent	Total Cost	Your Cost
Cultural:							
Chop Vetch	0.20	2.39	1.75	0.00	0.00	4.13	
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	
Drill Rice Seed	0.25	3.00	1.47	16.88	10.50	31.85	
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	
Flush Fields	0.07	0.52	0.00	1.96	0.00	2.48	
Permanent Flood	1.20	8.84	0.00	33.32	0.00	42.16	
Pickup use	0.43	5.20	1.57	0.00	0.00	6.77	
<b>TOTAL CULTURAL COSTS</b>	<b>2.68</b>	<b>25.16</b>	<b>10.96</b>	<b>55.95</b>	<b>29.25</b>	<b>121.32</b>	
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	
<b>TOTAL HARVEST COSTS</b>	<b>1.30</b>	<b>15.60</b>	<b>23.04</b>	<b>0.00</b>	<b>77.00</b>	<b>115.64</b>	
Interest on operating capital @ 9.00%						7.23	
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>40.76</b>	<b>34.00</b>	<b>55.95</b>	<b>106.25</b>	<b>244.19</b>	
<b>TOTAL OPERATING COSTS/CWT</b>						<b>4.88</b>	

U.C. COOPERATIVE EXTENSION  
 ORGANIC RICE - NO-TILL DRILL 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				44.94
Equipment Insurance				22.47
Investment Repairs				1.92
TOTAL CASH OVERHEAD COSTS				116.12
TOTAL CASH COSTS/ACRE				360.31
TOTAL CASH COSTS/CWT				7.21
NON-CASH OVERHEAD:				
	Per producing	Annual Cost		
	Acre	Depreciation	Interest @ 4.00%	
Investment				
-----	-----	-----	-----	
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	576.15	71.01	12.68	83.69
TOTAL NON-CASH OVERHEAD COSTS				293.34
TOTAL COSTS/ACRE				653.65
TOTAL COSTS/CWT				13.07
=====				

U.C. COOPERATIVE EXTENSION

Table 5. DETAIL OF COSTS PER ACRE TO PRODUCE ORGANIC RICE  
NO-TILL DRILL 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	
Rent:					
No Till Drill	1.00	acre	10.50	10.50	
Seed:					
Seed	1.35	cwt	12.50	16.88	
Misc.:					
Rice Boxes	0.19	box	20.00	3.80	
Water:					
Water	72.00	acin	0.49	35.28	
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)	2.96	hrs	10.00	29.56	
Labor (non-machine)	1.52	hrs	7.37	11.20	
Fuel - Diesel	19.21	gal	0.71	13.64	
Lube				2.05	
Machinery repair				18.30	
Interest on operating capital @ 9.00%				7.23	
				-----	
TOTAL OPERATING COSTS/ACRE				244.19	
TOTAL OPERATING COSTS/CWT				4.88	

U.C. COOPERATIVE EXTENSION  
 ORGANIC RICE - NO-TILL DRILL 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	44.94
Equipment Insurance	22.47
Investment Repairs	1.92
	-----
TOTAL CASH OVERHEAD COSTS/ACRE	116.12
-----	
TOTAL CASH COSTS/ACRE	360.31
TOTAL CASH COSTS/CWT	7.21
-----	
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	83.69
	-----
TOTAL NON-CASH OVERHEAD COSTS/ACRE	293.34
-----	
TOTAL COSTS/ACRE	653.65
TOTAL COSTS/CWT	13.07
-----	
=====	

U.C. COOPERATIVE EXTENSION

Table 6. MONTHLY CASH COSTS PER ACRE TO PRODUCE ORGANIC RICE - NO-TILL DRILL SEEDED

Beginning APR 92	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC 92	92	92	92	92	92	92	92	92	92	92	92	92	
Cultural:													
Chop Vetch				4.13									4.13
Laser Level 1 of 4 years				18.75									18.75
Triplane 3 of 4 years				8.70									8.70
Drill Rice Seed				31.85									31.85
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
Flush Fields				2.48									2.48
Permanent Flood					8.43	8.43	8.43	8.43	8.43				42.16
Pickup use												6.77	6.77
-----													
TOTAL CULTURAL COSTS				72.39	8.43	8.43	8.43	8.43	8.43			6.77	121.32
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				0.54	0.61	0.67	0.73	0.80	0.86	1.29	1.73		7.23
-----													
TOTAL OPERATING COSTS/ACRE				72.93	9.04	9.10	9.17	9.23	9.29	59.11	59.55	6.77	244.19
TOTAL OPERATING COSTS/CWT				1.46	0.18	0.18	0.18	0.18	0.19	1.18	1.19	0.14	4.88
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				22.47								22.47	44.94
Equipment Insurance												22.47	22.47
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			27.13	4.66	4.66	4.66	4.66	4.66	4.66	10.53	49.60	116.12
TOTAL CASH COSTS/ACRE	0.92			100.06	13.70	13.76	13.82	13.89	13.95	63.77	70.08	56.37	360.31
TOTAL CASH COSTS/CWT	0.02			2.00	0.27	0.28	0.28	0.28	0.28	1.28	1.40	1.13	7.21

Table 7.

U.C. COOPERATIVE EXTENSION  
 ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS FOR ORGANIC RICE PRODUCTION  
 NO-TILL DRILL SEEDED

ANNUAL EQUIPMENT COSTS

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=====
                                - Non-Cash Over. - - Cash Overhead -
                                Yrs   Depre-
                                Life  ciation  Interest  Insur-
Yr      Description           Price  Life  ciation  Interest  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 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 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                           606080          70141.93  13333.76  1666.71  3333.44  88475.84
=====
40% of New Cost *              242432          28056.77  5333.50   666.68  1333.38  35390.34
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\* Used to reflect a mix of new and used equipment.



U.C. COOPERATIVE EXTENSION  
 ORGANIC RICE - NO-TILL DRILL SEEDED  
 Table 7. continued

ANNUAL INVESTMENT COSTS

=====									
- Non-Cash Over. - ----- Cash Overhead -----									
Yr	Description	Price	Yrs Life	Depre- ciation	Interest	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
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=====									

ANNUAL BUSINESS OVERHEAD COSTS

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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
=====				

Table 8.

U.C. COOPERATIVE EXTENSION  
 HOURLY EQUIPMENT COSTS FOR ORGANIC RICE PRODUCTION  
 NO-TILL DRILL SEEDED

Yr Description	----- COSTS PER HOUR -----								
	Actual Hours Used	-Non-Cash Over-Depre- ciation	Over.- Interest	- Cash Overhead - Insur- ance	Taxes	Repairs	Operating Fuel & Lube	Total Oper.	Total Costs/Hr.
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	102.6	35.55	13.03	1.63	3.26	5.07	13.51	18.58	72.04
92 90HP 2WD Tractor	148.2	7.09	2.60	0.33	0.65	1.75	3.61	5.36	16.03
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	1.26	0.00	1.26	85.49
92 Disc-Offset 18'#1	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 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

Table 9. U.C. COOPERATIVE EXTENSION  
RANGING ANALYSIS

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE ORGANIC RICE - NO-TILL DRILL SEEDED

	YIELD (CWT/ACRE)						
	12	26	38	50	60	70	80
-----							
OPERATING COSTS/ACRE:							
Cultural Cost	121	121	121	121	121	121	121
Harvest Cost	31	62	89	116	138	160	182
Interest on operating capital	6	7	7	7	7	8	8
TOTAL OPERATING COSTS/ACRE	159	190	217	244	267	289	312
TOTAL OPERATING COSTS/CWT	13.21	7.31	5.71	4.88	4.45	4.13	3.90
CASH OVERHEAD COSTS/ACRE	116	116	116	116	116	116	116
TOTAL CASH COSTS/ACRE	274	306	333	360	383	405	428
TOTAL CASH COSTS/CWT	22.84	11.77	8.77	7.21	6.38	5.79	5.35
NON-CASH OVERHEAD COSTS/ACRE	276	286	290	293	295	296	297
TOTAL COSTS/ACRE	550	592	624	654	678	702	725
TOTAL COSTS/CWT	45.84	22.77	16.41	13.07	11.30	10.03	9.07
-----							

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR ORGANIC RICE - NO-TILL DRILL SEEDED

PRICE (DOLLARS PER CWT)	YIELD (CWT/ACRE)						
	12	26	38	50	60	70	80
14.50	15	187	334	481	603	726	848
15.50	27	213	372	531	663	796	928
16.50	39	239	410	581	723	866	1008
17.50	51	265	448	631	783	936	1088
18.50	63	291	486	681	843	1006	1168
19.50	75	317	524	731	903	1076	1248
20.00	81	330	543	756	933	1111	1288
-----							

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

NET RETURNS PER ACRE ABOVE CASH COSTS FOR ORGANIC RICE - NO-TILL DRILL SEEDED

PRICE (DOLLARS PER CWT)	YIELD (CWT/ACRE)						
	12	26	38	50	60	70	80
14.50	-100	71	218	365	487	610	732
15.50	-88	97	256	415	547	680	812
16.50	-76	123	294	465	607	750	892
17.50	-64	149	332	515	667	820	972
18.50	-52	175	370	565	727	890	1052
19.50	-40	201	408	615	787	960	1132
20.00	-34	214	427	640	817	995	1172

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR ORGANIC RICE - NO-TILL DRILL SEEDED

PRICE (DOLLARS PER CWT)	YIELD (CWT/ACRE)						
	12	26	38	50	60	70	80
14.50	-376	-215	-73	71	192	313	435
15.50	-364	-189	-35	121	252	383	515
16.50	-352	-163	3	171	312	453	595
17.50	-340	-137	41	221	372	523	675
18.50	-328	-111	79	271	432	593	755
19.50	-316	-85	117	321	492	663	835
20.00	-310	-72	136	346	522	698	875