
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2007

SAMPLE COSTS TO PRODUCE

RICE



DELTA REGION
OF
SAN JOAQUIN & SACRAMENTO COUNTIES
SAN JOAQUIN VALLEY - North
Continuous Rice Culture

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San Joaquin Valley – North 2007

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Sample costs to produce rice in the northern San Joaquin and Sacramento Valley Delta region (San Joaquin and Sacramento counties) are presented in this study. This study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Practices described are based on those production practices considered typical for the crop and area, but will not apply to every farm. Sample costs for labor, materials, equipment and custom services are based on current figures. A blank column, “*Your Costs*”, in Tables 2 and 3 is provided to enter your farming costs.

The hypothetical farm operation, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, (530) 752-3589 or your local UC Cooperative Extension office.

Sample Cost of Production Studies are available for many commodities. All current and some archived studies can be downloaded from the Agricultural and Resource Economics website at UC Davis <http://coststudies.ucdavis.edu>. These studies as well as other archived studies not on the website can be requested through the department by calling (530) 752-1517.

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ASSUMPTIONS

The assumptions refer to Tables 1 to 8 and pertain to sample costs to produce medium grain rice in the northern San Joaquin and Sacramento Valley Delta region (San Joaquin and Sacramento counties). The cultural practices described represent production operations and materials considered typical for a well managed farm in the region. Costs, materials, and practices in this study will not apply to all farms. Timing of and types of cultural practices will vary among growers within the region and from season to season due to variables such as weather, soil, insect and disease pressure. The study is intended as a guide only. **The use of trade names and cultural practices 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 or cultural practices.**

Farm. The study is based on a hypothetical non-contiguous 1,100 acre farm of which 1,000 acres are continuously planted to rice. The remaining 100 acres are farmstead, roads, rice levees, and ditches. Typically, a grower with this amount of rice acreage will have several non-adjacent fields and the cultural practices will vary among fields. The farm is located on high percent organic peat soils in the Delta region of San Joaquin and Sacramento Counties. The farm is owned and managed by the grower.

Cultural Practices and Material Inputs

Field Establishment (Table 1). The rice paddies are being established for long term continuous rice production. Tillage operations are done in the fall (October) and consist of disking twice with a heavy duty disc, chiseling (may not be necessary in all fields), laser leveling and building levees are done in one operation, disking once with a finish disc and installing irrigation/drainage boxes. Levees are large, flat and approximately 15 feet wide for long term stability and provide ample room for mowing weeds. The rice boxes are included in the establishment costs, because they will be removed when rice growing is finished.

Field Preparation. In the spring of each year, the field is disced three times – twice with a heavy duty disk and once with a finish disk. The field is then floated or touched up with a laser level (may not need to be done every year). Levees are mowed and the boxes repaired.

Planting. Certified seed of M104 rice is planted in April or May. M104 is a medium grain Calrose variety having cold weather tolerance and adapted to the Delta environment. Each check or paddy is 20 acres. The rice is drilled into moist soil with a 25 foot grain seeder onto the prepared seed bed at 6-inch spacing. The planting operation runs 12 hours per day, but includes lunch and downtime. The planting crew uses one tractor driver for the planter plus one person on the drill. Starter fertilizer is applied with the seed. Two tractors plus two tenders that are furnished by the fertilizer company are used to transport the seed and fertilizer from the truck to the drill. One operator handles both of these operations. Two 30 foot belt loaders (furnished by the fertilizer company) are located at the truck to load the tenders from the bottom dump trailers.

Nutrition. At planting, 150 pounds of starter fertilizer 11-52-0 + 1% zinc is applied through the grain drill. In June, nitrogen (N) as 21-0-0 is applied by ground prior to flooding at the rate of 83 pounds (400 pounds of material) per acre. The field may require a top dress and in this study, 21 pounds of N per acre by air is applied in July using ammonium sulfate (100 pounds of material).

Soil/Tissue Sampling. Soil samples are taken in March (not necessarily on an annual basis) for phosphorous (P) and potassium (K) analysis at one sample per 25 acres. Tissue samples are collected in late June for N analysis at one sample per 25 acres. All samples are collected by the PCA and the analysis are included as part of the grower service agreement.

Irrigation. The fields are flooded beginning in early June when the rice is six inches tall and drained in late August or September. Flooding and draining labor costs are included in the irrigator labor. It is assumed that the irrigator checks the field daily during June, July and August. The irrigator travels the fields in a pickup and based on grower data takes 0.133 hours per acre. The land is below sea level and after opening a siphon valve on the river, the water flows into the fields. Growers have riparian rights and pay a reclamation fee for water costs which are listed under Cash Overhead. In the fall after harvest, the fields are flooded and allowed to set over the winter. They are then drained in the spring (March) to prepare the field for the new season.

Pest Management. The pesticides and rates mentioned in this cost study are listed in *UC Pest Management Guidelines, Rice*. For more information on pest identification, monitoring, and management visit the UC IPM website at www.ipm.ucdavis.edu. For information and pesticide use permits, contact the local county Agricultural Commissioner's office. Adjuvants or surfactants may be recommended for use with some pesticides, but are not included in this study. Pesticide costs vary by location and grower volume. Pesticide costs in this study are taken from a single dealer and shown with an assumed volume discount.

Pest Control Adviser (PCA). The PCA or crop consultant monitors the field for agronomic problems including pests and nutrition, collects soil and tissue samples, and writes pesticide recommendations. Growers may hire private PCAs or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. PCA service is provided by the chemical/fertilizer company in this study.

Weeds. Broadleaf and grasses are troublesome weeds in rice fields. The first step for weed control maybe Roundup (glyphosate) ground applied to early germinating weeds and before the rice emerges. After rice emergence and before flooding, Regiment and Prowl are ground applied to the field for control of broadleaves and grasses. For each application, one person delivers the material to the applicator, while one person mixes the materials. Both work while the field applicator is spraying. Another person delivers water to the mixing area and works half the time of the mixer. The water tank and ball tank for hauling the mixture is furnished by the chemical company. The levees are mowed once (April) or twice a year (April, October), with dual rotary mowers when there is no water in the field. The October operation is shown in the tables under post harvest.

Insects. Armyworms are an occasional but serious problem in some rice fields. In this study Warrior insecticide is applied in July by air to 20% of the acres.

Disease. No diseases assumed.

Harvest. The water is drained from the field 7 to 10 days before harvest. The rice crop is harvested beginning at 22% kernel moisture (green rice) using a rice combine with a cutter-bar header. The grower owns the rice combine and bankout wagon. Although not included in this study, a grower of this size may have a second or backup combine. The grain is dumped from the combine into a bankout wagon that transports the grain to the grain trailers at the field edge. Once the grain trailers are full, the grain is transported to the grower's designated dryer and storage at no cost to the grower.

Yields. According to the Ag Commissioner's Annual Crop Report for 2003 to 2006, the average yields in the county ranged from 60 to 81 hundredweight (cwt). Yields provided by growers in the Delta Region ranged from 63 to 92 hundredweight. For this study an 80 hundredweight at 12% moisture (dry weight) is assumed.

Returns. The rice is sold in this study for \$11 per hundredweight (cwt). Returns according to the Ag Commissioners Annual Crop Report for 2003 to 2006 range from \$9.00 to \$11.75 per hundredweight. Government payments due to their complexity are not described in the study. For more information on the programs, contact the USDA Farm Service Agency.

Assessments. Under a state marketing order a mandatory assessment is collected and administered by the California Rice research Board. The \$0.06 per dry hundredweight pays for rice research in California. In addition, the California Rice Commission assesses the grower and handler each \$0.0425 per dry hundredweight.

Drying and Storage. Drying charges increase with moisture content and most dryers use a rate schedule that reflects the loss of moisture plus other invisible losses in the system associated with immature kernels, dockage and dust. The non-moisture factor varies among dryers, but ranges from about 2% to 6%. Together, these losses are called 'shrink'. Rice is assumed to be dried to 12% moisture. The drying charge is based on the greenweight (94.7 cwt).

Post Harvest. In October, the levees are mowed, the straw is shredded/mulched with a flail mower, and then the field is flooded for the winter.

Pickup. The one-half ton pickup is used by the irrigator and included in the irrigation cost. Non-irrigation pickup use for the one-half ton is listed as a separate line item. The three-quarter ton pickup used by the owner/operator is included as a line item. The mileage and times are estimated and not taken from any specific data.

Labor, Equipment, and Interest Costs

Labor. Labor rates of \$13.90 per hour for machine operators and \$11.12 for general labor includes payroll overhead of 39%. The basic hourly wages are \$10.00 for machine operators and \$8.00 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for field crops (code 0171), and a percentage for other possible benefits. Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2007 (personal email from California Department of Insurance, May 18, 2007, unreferenced). Labor for operations involving machinery are 20% higher than the operation time given in Table 1 and 2 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum power takeoff (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are \$2.30 and \$2.80 per gallon, respectively. Fuel costs are derived from American Automobile Association (AAA) and Energy Information Administration 2006 monthly data. The cost includes a 2% local sales tax on diesel fuel and 8% sales tax on gasoline. Gasoline also includes federal and state excise tax, which are refundable for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in Table 1 and 2 are determined by multiplying the total hourly operating cost in Table 7 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

Interest on Operating Capital. Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 10.00% per year. A nominal interest rate is the typical market cost of

borrowed funds. The interest cost of post harvest operations is discounted back to the last harvest month using a negative interest charge. The rate will vary depending upon various factors, but the rate in this study is considered a typical lending rate by a farm lending agency as of January 2007.

Risk. Risks associated with rice production are not assigned a production cost. While this study makes an effort to model a production system based on typical real world practices, it cannot fully represent financial, agronomic and market risks which affect the profitability and economic viability of rice production.

Cash Overhead

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation.

Property Taxes. Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by two on a per acre basis.

Insurance. Insurance for farm investments vary depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.714% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,303 for the entire farm.

Office Expense. Office and business expenses are estimated at \$50 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, and legal fees for whole farm. The cost is a general estimate and not based on any actual data.

Reclamation Fee. The Reclamation District manages the main drainage canals and charges \$48 per acre. There are several districts in the region and fees vary between districts.

Non-Cash Overhead

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments.

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). 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 formula for the calculation of the annual capital recovery costs is $((\text{Purchase Price} - \text{Salvage Value}) \times \text{Capital Recovery Factor}) + (\text{Salvage Value} \times \text{Interest Rate})$.

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wearout life, as given by ASAE by the annual hours of use in this operation.

For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is 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. The amortization factor is a table value that corresponds to the interest rate used and the life of the machine.

Interest Rate. An interest rate of 7.25% is used to calculate capital recovery. The rate will vary depending upon loan amount and other lending agency conditions, but is the basic suggested rate by a farm lending agency as of January 2007.

Land. Land in the delta is valued at \$2,500 to \$6,000 per acre (Trends & Leases). For this study, a value of \$4,000 is assumed.

Building. The metal building(s) are on a cement slab and total approximately 5,000 square feet. The buildings are used for shops and equipment storage.

Fuel Tanks. Two 500 gallon fuel tanks are on metal stands in cement containment meeting federal and state regulations.

Shop/Field Tools. Includes shop equipment and tools and small tools and/or small hand equipment used in the field.

Field Establishment. Field costs to establish a permanent rice field are used to determine capital recovery expenses, depreciation and interest on investment for the production years. Establishment cost is the sum of the land preparation and related cash costs. The costs are amortized over the 10 years the field is expected to be in production.

Equipment. Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs for equipment and other investments are shown in Table 6. 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 and are discussed under operating costs.

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

REFERENCES

- Agricultural Commissioner. 2003, 2004, 2005, 2006 *Annual Crop Reports, San Joaquin County*. Agricultural Commissioner's Office, San Joaquin County, Stockton, CA.
- American Automobile Association. 2007. *Gas Price Survey 2006*. AAA Public Affairs, San Francisco, CA.
- American Society of Agricultural Engineers. (ASAE). 1992. *American Society of Agricultural Engineers Standards Yearbook*. St. Joseph, MO.
- Boehlje, Michael D., and Vernon R. Eidman. 1984. *Farm Management*. John Wiley and Sons. New York, NY.
- Doanes Editors. *Facts and Figures for Farmers*. 1977. Doane Publishing, St. Louis, MO. P 292.
- California Chapter of the American Society of Farm Managers and Rural Appraisers. 2007. *Trends in Agricultural Land and Lease Values*. California Chapter of the American Society of Farm Managers and Rural Appraisers, Inc. Woodbridge, CA.
- California State Board of equalization. *Fuel Tax Division Tax Rates*. Internet accessed January 2007. <http://www.boe.ca.gov/sptaxprog/spftdrates.htm>
- Energy Information Administration. 2006. *Weekly Retail on Highway Diesel Prices*. Internet accessed January 2007. <http://tonto.eia.doe.gov/oog/info/wohdp>
- Statewide Integrated Pest Management Project. 1990. *Integrated Pest Management for Rice*. Third Edition. University of California. Division of Agriculture and Natural Resources. Oakland, CA. Publication 3274.
- University of California Statewide Integrated Pest Management Program. *UC Pest Management Guidelines, Rice*. 2006. University of California, Davis, CA. <http://www.ipm.ucdavis.edu>

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Table 1. SAMPLE COSTS TO ESTABLISH A RICE FIELD
 DELTA REGION (San Joaquin & Sacramento Counties) 2007

Operation	Operation	Cash and Labor Cost per acre					Total Cost	Your Cost
	Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/Rent			
Establishment Costs:								
Disk 2X	0.23	4	8	0	0	12		
Level Field & Build Levees	0.33	6	35	0	0	41		
Install Rice Boxes	0.04	1	0	36	0	37		
Chisel Plow 50% of acres	0.04	1	1	0	0	2		
Disk 1X	0.16	3	6	0	0	8		
TOTAL ESTABLISHMENT COSTS/ACRE	0.80	14	51	36	0	101		
Interest on operating capital @ 10.00%						3		
TOTAL OPERATING COSTS/ACRE		14	51	36	0	103		
Cash Overhead:								
Office Expense						13		
Liability Insurance						0		
Reclamation Fee						12		
Property Taxes						54		
Property Insurance						7		
Investment Repairs						4		
TOTAL CASH OVERHEAD COSTS						89		
TOTAL CASH COSTS/ACRE						193		

UC COOPERATIVE EXTENSION
Table 2. COSTS PER ACRE TO PRODUCE RICE
 DELTA REGION (San Joaquin & Sacramento Counties) 2007

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per acre				Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:							
Irrigation: Drain Field (winter flooding)	0.01	0.11	0.00	0.00	0.00	0	
Weed: Mow Levees	0.03	0.42	0.58	0.00	0.00	1	
Irrigation: Rice Box & Levee Repair	0.28	3.11	0.00	0.00	0.00	3	
Fertilize: Soil Samples (collected by PCA)	0.00	0.00	0.00	0.00	0.00	0	
Field Prep: Disk 2X (Heavy Duty Disk)	0.23	3.80	8.03	0.00	0.00	12	
Field Prep: Disk 1X (Finish Disk)	0.16	2.65	5.84	0.00	0.00	8	
Field Prep: Float/Triplane	0.16	2.70	6.40	0.00	0.00	9	
Plant/Fertilize: (Seed/11-52-0+Zn)	0.38	11.57	13.69	62.55	0.00	88	
Weed: prior to rice emergence (Roundup)	0.17	3.56	2.61	6.56	0.00	13	
Weed: after rice emergence (Regiment, Prowl)	0.17	3.56	2.61	51.66	0.00	58	
Fertilize: broadcast & topdress (21-0-0)	0.03	0.57	0.53	56.70	8.50	66	
Irrigate: Flood Field (Labor for checking daily)	0.27	4.44	1.35	0.00	0.00	6	
Fertilize: Leaf Samples (collected by PCA)	0.00	0.00	0.00	0.00	0.00	0	
Insect: Worms (Warrior) 20% of acres	0.00	0.00	0.00	2.63	2.00	5	
Irrigate: Flood & Drain Field (August)	0.13	2.22	0.68	0.00	0.00	3	
Pickup: 1/2 ton	0.13	2.22	0.68	0.00	0.00	3	
Pickup: 3/4 ton	0.10	1.67	0.73	0.00	0.00	2	
TOTAL CULTURAL COSTS/ACRE	2.25	42.60	43.73	180.10	10.50	277	
Harvest							
Combine Rice	0.19	3.15	16.19	0.00	0.00	19	
Bankout Rice	0.19	3.15	2.16	0.00	0.00	5	
Dry & Store Rice	0.00	0.00	0.00	0.00	128.50	129	
Assessment	0.00	0.00	0.00	8.24	0.00	8	
TOTAL HARVEST COSTS/ACRE	0.38	6.30	18.35	8.24	128.50	161	
Post Harvest:							
Weed: Mow Levees	0.03	0.42	0.58	0.00	0.00	1	
Straw: Chop/Mulch	0.34	5.74	12.55	0.00	0.00	18	
Irrigate: Flood for Winter	0.02	0.22	0.00	0.00	0.00	0	
TOTAL POSTHARVEST COSTS	0.39	6.38	13.13	0.00	0.00	20	
Interest on operating capital @ 10%						11	
TOTAL OPERATING COSTS/ACRE		55.28	75.21	188.34	139.00	469	
CASH OVERHEAD:							
Office Expense						50	
Liability Insurance						1	
Reclamation District Fees						48	
Property Taxes						49	
Property Insurance						3	
Investment Repairs						4	
TOTAL CASH OVERHEAD COSTS						155	
TOTAL CASH COSTS/ACRE						625	
NON-CASH OVERHEAD:							
Investment		Per producing Acre		Annual Cost Capital Recovery			
Land		4,400		319		319	
Buildings		160		13		13	
Fuel Tanks		10		1		1	
Tools-Shop/Field		25		2		2	
Field Establishment		180		26		26	
Equipment		619		79		79	
TOTAL NON-CASH OVERHEAD COSTS		5,393		440		440	
TOTAL COSTS/ACRE						1,065	

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Table 3. COSTS AND RETURNS PER ACRE to PRODUCE RICE
 DELTA REGION (San Joaquin & Sacramento Counties) 2007

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Rice	80.00	cwt	11.00	880	
OPERATING COSTS					
Seed:					
Certified Rice Seed- M104	1.40	cwt	21.00	29	
Fertilizer:					
11-52-0 + 1% Zn	150.00	lb	0.22	33	
21-0-0-24S	105.00	lb N	0.54	57	
Herbicide:					
Roundup Ultra Max	16.00	floz	0.41	7	
Regiment CA	0.67	oz	63.50	43	
Prowl H2O	2.00	pint	4.56	9	
Irrigation:					
Water (No Cost)	4.50	acft	0.00	0	
Water (Winter No Cost)	3.00	acft	0.00	0	
Insecticide:					
Warrior	1.00	floz	2.63	3	
Assessment:					
California Rice Research Board (CRRB)	80.00	cwt	0.06	5	
California Rice Commission (CRC) (\$0.043/cwt)	80.00	cwt	0.04	3	
Custom/Contract:					
Air Application - Fertilizer	1.00	acre	8.50	9	
Air Application - Insecticide (helicopter)	0.20	acre	10.00	2	
Rice Drying Charge	94.70	cwt	0.85	80	
Rice Storage Charge	80.00	cwt	0.60	48	
Labor (machine)	3.47	hrs	13.90	48	
Labor (non-machine)	0.64	hrs	11.12	7	
Fuel - Gas	0.53	gal	2.80	1	
Fuel - Diesel	21.18	gal	2.30	49	
Lube				8	
Machinery repair				17	
Interest on operating capital @ 10%				11	
TOTAL OPERATING COSTS/ACRE				469	
NET RETURNS ABOVE OPERATING COSTS				411	
CASH OVERHEAD COSTS:					
Office Expense				50	
Liability Insurance				1	
Reclamation District Fees				48	
Property Taxes				49	
Property Insurance				3	
Investment Repairs				4	
TOTAL CASH OVERHEAD COSTS/ACRE				155	
TOTAL CASH COSTS/ACRE				625	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Land				319	
Buildings				13	
Fuel Tanks				1	
Tools-Shop/Field				2	
Field Establishment				26	
Equipment				79	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				440	
TOTAL COSTS/ACRE				1,065	
NET RETURNS ABOVE TOTAL COSTS				-185	

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Table 4. MONTHLY CASH COSTS PER ACRE to PRODUCE RICE
DELTA REGION (San Joaquin & Sacramento Counties) 2007

Beginning JAN 07 Ending DEC 07	JAN 07	FEB 07	MAR 07	APR 07	MAY 07	JUN 07	JUL 07	AUG 07	SEP 07	OCT 07	NOV 07	DEC 07	TOTAL
Cultural:													
Irrigation: Drain Field (winter flooding)			0										0
Weed: Mow Levees 2X			1										1
Irrigation: Rice Box & Levee Repair			3										3
Fertilize: Soil Samples (collected by PCA)			0										0
Field Prep: Disk 2X (Heavy Duty Disk)				12									12
Field Prep: Disk 1X (Finish Disk)				8									8
Field Prep: Float/Triplane				9									9
Plant/Fertilize: (Seed/11-52-0+Zn)					88								88
Weed: prior to rice emergence (Roundup)					13								13
Weed: after rice emergence (Regiment, Prowl)					58								58
Fertilize: broadcast & topdress (21-0-0)					46		20						66
Irrigate: Flood Field (Labor for checking daily)						3	3						6
Fertilize: Leaf Samples (collected by PCA)							0						0
Insect: Worms (Warrior) 20% of acres							5						5
Irrigate: Flood & Drain Field (August)								3					3
Pickup: 1/2 ton	0	0	0	0	0	0	0	0	0	0	0	0	3
Pickup: 3/4 ton	0	0	0	0	0	0	0	0	0	0	0	0	2
TOTAL CULTURAL COSTS	0	0	5	30	205	3	28	3	0	0	0	0	277
Harvest:													
Combine Rice									19				19
Bankout Rice									5				5
Dry & Store Rice									80	48			128
Assessment										8			8
TOTAL HARVEST COSTS									105	56			161
Postharvest:													
Weed: Mow Levees										1			1
Straw: Chop/Mulch										18			18
Irrigate: Flood for Winter										0			0
TOTAL POSTHARVEST COSTS										20			20
Interest on operating capital @ 10%	0	0	0	0	2	2	2	2	3	-1	0	0	11
TOTAL OPERATING COSTS/ACRE	0	0	5	30	207	5	30	6	109	76	0	0	469
Cash Overhead:													
Office Expense	5	5	5	5	5	5	5	5	5	5			50
Liability Insurance		1											1
Reclamation District Fees						48							48
Property Taxes				24								24	49
Property Insurance	2						2						3
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	4
TOTAL CASH OVERHEAD COSTS	7	7	5	30	5	53	7	5	5	5	0	25	155
TOTAL CASH COSTS/ACRE	7	7	10	60	213	59	37	11	114	81	1	25	625

UC COOPERATIVE EXTENSION
Table 5. RANGING ANALYSIS
 DELTA REGION (San Joaquin & Sacramento Counties) 2007

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE RICE

	YIELD (cwt/acre)						
	56	64	72	80	88	96	104
OPERATING COSTS:							
Cultural Cost	277	277	277	277	277	277	277
Harvest (combine & bankout)	17	20	22	25	27	30	32
Dry & Store	90	103	116	128	141	154	167
Assessment	6	7	7	8	9	10	11
Post Harvest Costs	20	20	20	20	20	20	20
Interest on operating capital @ 10%	11	11	11	11	12	12	12
TOTAL OPERATING COSTS/ACRE	421	438	453	469	486	503	519
Total Operating Costs/cwt	8	7	6	6	6	5	5
CASH OVERHEAD COSTS/ACRE	155	155	155	155	155	155	155
TOTAL CASH COSTS/ACRE	576	593	608	624	641	658	674
Total Cash Costs/cwt	10	9	8	8	7	7	6
NON-CASH OVERHEAD COSTS/ACRE	440	440	440	440	440	440	440
TOTAL COSTS/ACRE	1,016	1,033	1,048	1,064	1,081	1,098	1,114
Total Costs/cwt	18	16	15	13	12	11	11

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/cwt	YIELD (cwt/acre)						
	56	64	72	80	88	96	104
8	27	74	123	171	218	265	313
9	83	138	195	251	306	361	417
10	139	202	267	331	394	457	521
11	195	266	339	411	482	553	625
12	251	330	411	491	570	649	729
13	307	394	483	571	658	745	833
14	363	458	555	651	746	841	937

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/cwt	YIELD (cwt/acre)						
	56	64	72	80	88	96	104
8	-128	-81	-32	16	63	110	158
9	-72	-17	40	96	151	206	262
10	-16	47	112	176	239	302	366
11	40	111	184	256	327	398	470
12	96	175	256	336	415	494	574
13	152	239	328	416	503	590	678
14	208	303	400	496	591	686	782

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE \$/cwt	YIELD (cwt/acre)						
	56	64	72	80	88	96	104
8	-568	-521	-472	-424	-377	-330	-282
9	-512	-457	-400	-344	-289	-234	-178
10	-456	-393	-328	-264	-201	-138	-74
11	-400	-329	-256	-184	-113	-42	30
12	-344	-265	-184	-104	-25	54	134
13	-288	-201	-112	-24	63	150	238
14	-232	-137	-40	56	151	246	342

UC COOPERATIVE EXTENSION
Table 6. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT,
 DELTA REGION (San Joaquin & Sacramento Counties) 2007

ANNUAL EQUIPMENT COSTS

Yr Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
					Insur- ance	Taxes	
07 152HP MFWD Tractor	96,253	10	28,432	11,829	445	623	12,898
07 180HP MFWD Tractor	121,951	10	36,022	14,988	564	790	16,342
07 55HP MFWD Tractor	30,975	10	9,150	3,807	143	201	4,151
07 95HP 2WD Tractor #1	59,563	10	17,594	7,320	275	386	7,981
07 95HP 2WD Tractor #2	59,563	10	17,594	7,320	275	386	7,981
07 Ball Tank (loaner)	0	0	0	0	0	0	0
07 Bankout Self Propelled 150 cwt	82,000	10	14,501	10,773	345	483	11,600
07 Belt #1 (loaner) 30'	0	0	0	0	0	0	0
07 Belt #2 (loaner) 30'	0	0	0	0	0	0	0
07 Bucket Scraper 15'	55,931	10	9,891	7,348	235	329	7,912
07 Combine w/25' header	311,821	10	58,819	40,704	1,323	1,853	43,880
07 Disc - Finish 26'	35,589	10	6,294	4,676	150	209	5,035
07 Disc Folding 17'	26,159	10	4,626	3,437	110	154	3,701
07 Drill Folding 6" spacing 25'	44,618	10	7,890	5,862	187	263	6,312
07 Fertilizer Spreader	18,150	10	3,210	2,384	76	107	2,568
07 Mower - Flail/Shredder 15'	13,314	10	2,354	1,749	56	78	1,883
07 Mower - Flex Rotary 15'	14,467	10	2,558	1,901	61	85	2,047
07 Pickup - 1/2 ton	26,000	10	7,680	3,195	120	168	3,484
07 Pickup - 3/4 ton	28,000	10	8,271	3,441	129	181	3,752
07 Sprayer 2-150 gal tanks 60' boom	7,000	10	1,238	920	29	41	990
07 Tender (loaner)	0	0	0	0	0	0	0
07 Tender (loaner)	0	0	0	0	0	0	0
07 Water Tank (loaner)	0	0	0	0	0	0	0
TOTAL	1,031,354		236,124	131,654	4,525	6,337	142,516
60% of New Cost *	618,812		141,674	78,992	2,715	3,802	85,510

* 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	
Building 5000 sqft	160,000	30		13,219	571	800	3,200	17,790
Field Establishment	179,510	10		25,854	0	0	0	25,854
Fuel Tanks 2-500 gal	10,000	20		962	36	50	200	1,248
Land 1100 acres	4,400,000	30	4,400,000	319,000	0	44,000	0	363,000
Shop/Field Tools	25,000	20		2,406	89	125	500	3,120
TOTAL INVESTMENT	4,774,510		4,400,000	361,442	696	44,975	3,900	411,013

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	1,000	acre	1.30	1,303
Office Expense	1,000	acre	50.00	50,000
Sanitation Fees	1,000	acre	48.00	48,000

UC COOPERATIVE EXTENSION
Table 7. HOURLY EQUIPMENT COSTS
 DELTA REGION (San Joaquin & Sacramento Counties) 2007

Yr Description	COSTS PER HOUR							
	Actual	Cash Overhead			Operating			Total
	Hours Used	Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube	Oper.	
07 152HP MFWD Tractor	208	34.14	1.28	1.80	1.84	23.33	25.17	62.39
07 180HP MFWD Tractor	982	9.15	0.34	0.48	0.58	27.63	28.21	38.18
07 55HP MFWD Tractor	111	20.63	0.78	1.09	0.79	7.14	7.93	30.43
07 95HP 2WD Tractor #1	410	10.72	0.40	0.57	2.66	12.34	15.00	26.69
07 95HP 2WD Tractor #2	355	12.39	0.47	0.65	2.66	12.34	15.00	28.51
07 Ball Tank (loaner)	67	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07 Bankout Self Propelled 150 cwt	208	31.09	0.99	1.39	2.46	7.93	10.39	43.86
07 Belt #1 (loaner) 30'	189	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07 Belt #2 (loaner) 30'	189	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07 Bucket Scraper 15'	162	27.22	0.87	1.22	8.46	0.00	8.46	37.77
07 Combine w/25' header	208	117.47	3.82	5.35	22.01	55.88	77.89	204.53
07 Disc - Finish 26'	159	17.64	0.56	0.79	5.68	0.00	5.68	24.67
07 Disc Folding 17'	228	9.04	0.29	0.41	4.18	0.00	4.18	13.92
07 Drill Folding 6" spacing 25'	189	18.61	0.60	0.83	11.75	0.00	11.75	31.79
07 Fertilizer Spreader	34	42.08	1.35	1.88	6.92	0.00	6.92	52.23
07 Mower - Flail/Shredder 15'	344	3.08	0.10	0.14	5.44	0.00	5.44	8.76
07 Mower - Flex Rotary 15'	50	22.81	0.73	1.02	6.76	0.00	6.76	31.32
07 Pickup - 1/2 ton	532	3.60	0.14	0.19	1.86	3.22	5.08	9.01
07 Pickup - 3/4 ton	100	20.65	0.78	1.09	2.00	5.29	7.29	29.81
07 Sprayer 2-150 gal tanks 60' boom	133	4.14	0.13	0.19	1.85	0.00	1.85	6.31
07 Tender (loaner)	189	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07 Tender (loaner)	189	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07 Water Tank (loaner)	33	0.00	0.00	0.00	0.00	0.00	0.00	0.00

UC COOPERATIVE EXTENSION

Table 8. OPERATIONS WITH EQUIPMENT & MATERIALS - PRODUCTION YEAR FOR RICE

DELTA REGION (San Joaquin & Sacramento Counties) 2007

MONTH	OPERATION	TRACTOR	IMPLEMENT	LABOR		MATERIAL	RATE/AC	UNIT
				HRS/acre				
March	Drain Field			0.01				
March	Weed: Mow Levees	95HP	Mower-Rotary					
March	Box/Levee Repair			0.28				
March	Fertilize: Soil Samples			0.02	Analysis	0.04	each	
April	Disc 2X (heavy duty disk)	180HP	Disc 17'					
April	Disc 1X (finish disk)	180HP	Disc 26'					
April	Float/Level	180HP	Bucket Scraper					
May	Plant/Fertilize	152HP	Drill		Seed	1.40	cwt	
		95HP	Tender		11-52-0-1Zn	150.00	lb	
		95HP #2	Tender #2					
			Belt #1					
May	Weed: Spray	95HP	Sprayer 60'		Roundup	16.00	floz	
		95HP #2	Ball Tank	0.70				
		55HP	Water Tank	0.70				
May	Weed: Spray	95HP	Sprayer 60'		Regiment	0.67	oz	
					Prowl	2.00	pt	
		95HP #2	Ball Tank	0.70				
		55HP	Water Tank	0.70				
May	Fertilize	55HP	Spreader		21-0-0	84.00	lb N	
July		Custom Air			21-0-0	21.00	lb N	
June	Flood	Pickup 1/2T			Water	1.50	acft	
July	Flood	Pickup 1/2T			Water	1.50	acft	
August	Flood & Drain	Pickup 1/2T			Water	1.50	acft	
July	Fertilize: Leaf Samples			0.02	Analysis	0.04	each	
July	Insect: Worms	Custom Air			Warrior	1.00	floz	
Sept	Combine Rice	Combine						
		Bankout						
Sept	Dry & Store Rice				Dry			
Oct	Dry & Store Rice				Store			
Oct	Post Harvest: Mow Levees	95HP	Mower-Rotary					
Oct	Post Harvest: Chop Mulch Straw	180HP	Mower-Flail					
Oct	Post Harvest: Flood for Winter			0.02	Water	3.00	acft	