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# **How Extension Programming Can Provide Useful Input for Land Tenure and Production Decisions: Projected Cost Structures and Decision Support Aids for Texas Coastal Bend Rice Landlords and Producers**

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# How Extension Programming Can Provide Useful Input for Land Tenure and Production Decisions: Projected Cost Structures and Decision Support Aids for Texas Coastal Bend Rice Landlords and Producers

Lawrence Falconer, Richard Jahn, and David Anderson<sup>1</sup>

## **Abstract**

The increased contribution of decoupled government payments on rice base acreage has led to a major change in land tenure agreements for rice-producing tenants and landlords in the Texas Coastal Bend. This paper reviews how Extension programming provides information and decision support aids to help both landlords and tenants make sound land tenure arrangements.

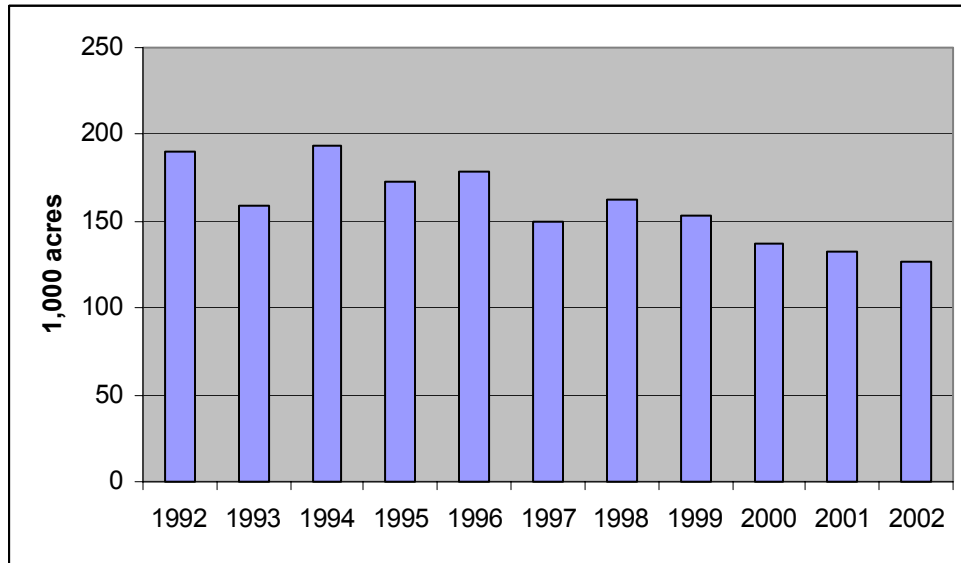
## **Introduction**

The rice production industry in the Texas Coastal Bend is currently experiencing a severe reduction in planted acreage (Figure 1). One of the major reasons for this reduction is the decoupling of farm program payments from planting requirements that was initiated in the 1996 Farm Bill (Outlaw et al.) and continued in the 2002 Farm Bill. An additional concern in the planting decision is the high level of direct contract payments per base acre under the 2002 Farm Bill along with the potential for large counter cyclical payments in periods of weak market prices. In many cases, these payments are in excess of traditional cash rental rates. Because these payments are decoupled from production decisions, landlords are choosing to raise cash rents or change traditional share crop arrangements to reflect the increased contribution of the rice crop

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base to the overall revenue stream expected from the rice production operation. In some cases, landlords have opted to retain all government payments, and have ceased to allow the land to be used in rice production.



**Figure 1. Acres planted to rice in the Texas Coastal Bend. Source: Texas Agricultural Statistics (various issues), Texas Agricultural Statistics Service, Austin, TX.**

### **Data and Methods**

Data related to the production practices for rice in the Texas Coastal Bend are obtained from three main sources. These sources include interviews with producers to obtain information on machinery complements employed, labor utilized, indirect cost information and size of operation. Input suppliers are interviewed to provide cost information for inputs and custom operations. Texas Agricultural Experiment Station and Texas Cooperative Extension (TCE) personnel are also interviewed to provide information related to water use and for pesticide and fertilizer utilization rates.

These data are then processed using the Mississippi State University Budget Generator (Laughlin and Spurlock) to create cost of production report estimates for the representative farm size and tillage system in the Texas Coastal Bend. Training and educational awareness programs related to computerized decision support aids for rice land tenure decisions that have been developed by TCE personnel are described below. These decision support aids depend heavily on sound cost of production estimates to assist producers and landlords to develop sustainable land tenure agreements.

### **Results and Discussion**

The planning budgets shown in Tables 1 and 2 were developed with input from producers, custom service and product suppliers and TCE specialists and agents. Producer and input supplier data were obtained through an initial face-to-face meeting, but feedback and verification of input data and calculations was done remotely over the internet using the Centra Symposium virtual meeting software package. This method was well received by the producers, as it allowed verification and feedback meetings to be held at their place of business. This method allowed for three follow-up meetings to be held, saving fifteen hours of specialist travel time plus expenses. These budgets are based on projections for input and output prices for the 2004 crop year. These budgets are intended to represent the cost structure for a hypothetical 450-acre rice operation on land that requires 18-20 levees per 100 acres. First and second crop budgets have been separated, and all general and administrative costs, crop insurance, consulting, land and vehicle charges assigned to first crop.

Annual usage rates for tractors are projected at 600 hours, with capital recovery factors calculated over a 14-year useful life. Annual usage rate for the combine was

estimated at 200 hours with capital recovery factor calculated over a 10-year useful life. No adjustment was made in aerial application costs for irregular shaped fields.

The budgeted fertility program for the first crop includes a base fertilizer application, one pre-flood application and two top-dress applications. The total first crop fertilizer application is comprised of 215 units of N, 33 units of P and 28 units of K. The budgeted first crop herbicide program includes an initial ground applied treatment of clomazone, an aerial application of a general tank-mix over the total planted acreage and a follow-up aerial application over one-half the planted acres to control escaped weeds. The budgeted pesticide program for the first crop includes a pyrethroid application to control water weevils, one fungicide application and three applications to control rice stink bugs.

The budgeted irrigation program for the first crop includes 1.57 hours per acre of labor for three flushes, flood maintenance and draining. Total first crop water usage is budgeted at 3.5 acre-feet, with water charges based on projected Lower Colorado River Authority (LCRA) rates for 2004.

The budgeted fertility program for the second-crop includes one top-dress application. The total second-crop fertilizer application is comprised of 69 units of N. The budgeted pesticide program for the second crop includes one application to control rice stink bugs.

The budgeted irrigation program for the second-crop includes 0.71 hours per acre of labor for one flush, flood maintenance and draining. Total second-crop water usage is budgeted at 1 acre-foot, with water charges based on projected LCRA rates for 2004.

Table 1. Summary of estimated costs and returns per acre for first crop rice on a 450-acre rice farm located west of Houston.

ITEM	UNIT	PRICE	QUANTITY	AMOUNT	YOUR FARM
		dollars		dollars	
INCOME					
RICE-1ST CROP LOAN	CWT	6.90	66.0000	455.40	_____
RICE-1ST CROP PREM.	CWT	2.00	66.0000	132.00	_____
				-----	
TOTAL INCOME				587.40	_____
DIRECT EXPENSES					
ADJUVANTS	ACRE	7.00	1.0000	7.00	_____
CUSTOM FERTILIZE	ACRE	21.25	1.0000	21.25	_____
CUSTOM SPRAY	ACRE	36.13	1.0000	36.13	_____
FERTILIZERS	ACRE	77.87	1.0000	77.87	_____
FUNGICIDES	ACRE	13.98	1.0000	13.98	_____
HERBICIDES	ACRE	60.67	1.0000	60.67	_____
INSECTICIDES	ACRE	14.38	1.0000	14.38	_____
IRRIGATION SUPPLIES	ACRE	9.25	1.0000	9.25	_____
SEED	ACRE	18.90	1.0000	18.90	_____
SURVEY LEVEES	ACRE	4.00	1.0000	4.00	_____
CROP INSURANCE-RICE	ACRE	6.75	1.0000	6.75	_____
IRRIGATION	ACRE	73.73	1.0000	73.73	_____
CHECKOFF/COMMISSION	ACRE	10.56	1.0000	10.56	_____
DRYING - RICE	ACRE	79.65	1.0000	79.65	_____
RICE HAULING	ACRE	21.24	1.0000	21.24	_____
STORAGE - RICE	ACRE	21.12	1.0000	21.12	_____
SERVICE FEES	ACRE	12.00	1.0000	12.00	_____
VEHICLES	ACRE	7.30	1.0000	7.30	_____
OPERATOR LABOR	hour	10.75	1.3603	14.66	_____
RICE WATER LABOR	hour	10.75	1.5700	16.87	_____
DIESEL FUEL	gal	0.95	12.6673	12.02	_____
REPAIR & MAINTENANCE	ACRE	32.73	1.0000	32.73	_____
INTEREST ON OP. CAP.	ACRE	21.28	1.0000	21.28	_____
				-----	
TOTAL DIRECT EXPENSES				593.34	_____
RETURNS ABOVE DIRECT EXPENSES				-5.94	_____
TOTAL FIXED EXPENSES				61.13	_____
				-----	
TOTAL SPECIFIED EXPENSES				654.47	_____
RETURNS ABOVE TOTAL SPECIFIED EXPENSES				-67.07	_____
RESIDUAL ITEMS					
RICE LAND RENT	acre	75.00	1.0000	75.00	_____
G&A OVERHEAD	acre	10.50	1.0000	10.50	_____
MANAGEMENT CHARGE	%	587.40	0.0500	29.37	_____
RESIDUAL RETURNS				-181.94	_____

Note: Cost of production estimates are based on 18-20 levees per 100 acre. General and administrative (G&A) includes accounting, legal, general liability insurance and miscellaneous expenses estimated at \$4,725/year. Vehicle charge is based on IRS allowance for 12,000 miles of annual use.

Table 2. Summary of estimated costs and returns per acre for second crop rice on a 450-acre rice farm located west of Houston.

ITEM	UNIT	PRICE	QUANTITY	AMOUNT	YOUR FARM
		dollars		dollars	
INCOME					
RICE-2ND CROP LOAN	CWT	6.90	16.0000	110.40	_____
RICE-2ND CROP PREM	CWT	2.00	16.0000	32.00	_____
				-----	
TOTAL INCOME				142.40	_____
DIRECT EXPENSES					
CUSTOM FERTILIZE	ACRE	5.25	1.0000	5.25	_____
CUSTOM SPRAY	ACRE	5.75	1.0000	5.75	_____
FERTILIZERS	ACRE	17.40	1.0000	17.40	_____
INSECTICIDES	ACRE	3.48	1.0000	3.48	_____
IRRIGATION	ACRE	10.96	1.0000	10.96	_____
CHECKOFF/COMMISSION	ACRE	2.56	1.0000	2.56	_____
DRYING - RICE	ACRE	20.24	1.0000	20.24	_____
RICE HAULING	ACRE	5.40	1.0000	5.40	_____
STORAGE - RICE	ACRE	5.12	1.0000	5.12	_____
OPERATOR LABOR	hour	10.75	0.3500	3.77	_____
RICE WATER LABOR	hour	10.75	0.7100	7.64	_____
DIESEL FUEL	gal	0.95	2.7795	2.63	_____
REPAIR & MAINTENANCE	ACRE	10.43	1.0000	10.43	_____
INTEREST ON OP. CAP.	ACRE	1.84	1.0000	1.84	_____
				-----	
TOTAL DIRECT EXPENSES				102.47	_____
RETURNS ABOVE DIRECT EXPENSES				39.93	_____
TOTAL FIXED EXPENSES				16.25	_____
				-----	
TOTAL SPECIFIED EXPENSES				118.72	_____
RETURNS ABOVE TOTAL SPECIFIED EXPENSES				23.68	_____
RESIDUAL ITEMS					
MANAGEMENT CHARGE	%	142.40	0.0500	7.12	_____
RESIDUAL RETURNS				16.56	_____

Note: Cost of production estimates are based on 18-20 levees per 100 acre. All general and administrative costs including accounting, legal, general liability insurance and miscellaneous expenses are charged to 1<sup>st</sup> crop. All crop insurance, consulting and land charges are assigned to 1<sup>st</sup> crop. Vehicle charges assigned to 1<sup>st</sup> crop.

No counter-cyclical or direct payments are included in these budgets. The breakeven price level needed to cover the budget's direct expenses for the first crop is \$8.99 per hundredweight. The breakeven price level needed to cover the budget's total specified expenses for the first crop is \$9.92 per hundredweight.



The Land Contribution Decision Support Aid (LCDSA) summary page is shown in Table 3. The LCDSA is comprised of two primary data input sheets for first and second crop rice production estimates based on the format shown in Tables 1 and 2. The cost of production data and planting intentions for the farm along with information related to government program support to rice base acres on the farm is input and summarized in Table 3. For the example shown in Table 3, it is assumed that there are 600 base acres for the example farm with direct and counter-cyclical payment yields of 5,100 pounds per acre. The example in Table 3 indicates a direct payment rate of \$2.35 per cwt, with no expected counter-cyclical payment.

The planting intentions input for this example show that 450 acres will be planted, and a second crop harvested on fifty percent of the initial acreage planted. A credit, in this case a rental equivalent for grazing is applied to the 150 base acres that are not planted. The LCDSA then calculates the total contribution by land to the rice enterprise, which is used as a proxy for the minimum rental amount a producer would have to pay for the rice base and is \$63,372 in this example. The reader should note that this is not the maximum value the landlord could expect to extract, as that value would be calculated as the total program payments for the farm plus a credit for under-planting the entire acreage, as long as the activity on the under-planted acreage does not disqualify the base acreage from eligibility for farm program benefits.

The LCDSA then uses the calculated land contribution as a proxy for land rental rate in combination with the cost structure for first and second crop rice to calculate the maximum rental rates at levels that would cover direct expenses, direct and residual expenses and all expenses.

Table 3. Land Contribution Analysis Decision Support Aid.

<b>Land Contribution Analysis</b>				
ITEM	QUANTITY	UNIT	PRICE	AMOUNT
RICE BASE ACRES ON FARM	600.0	ACRES		
DIRECT PAYMENT YIELD	51.00	CWT.		
COUNTER-CYCLICAL PAYMENT YIELD	51.00	CWT.		
DIRECT PAYMENT	43.350	CWT.	\$ 2.35	\$ 101.87
COUNTER-CYCLICAL PAYMENT	43.350	CWT.	\$ -	\$ -
PROGRAM PAYMENTS PER BASE ACRE				\$ 101.87
PROGRAM PAYMENTS FOR FARM				\$ 61,122.00
PLANTED ACRES FOR FARM	450.0	ACRES		
SECOND CROP ACRES FOR FARM	225.0	ACRES		
UNDER-PLANTED ACRES CREDIT FOR FARM	150.0	ACRES	\$ 15.00	\$ 2,250.00
LAND CONTRIBUTION TO RICE FOR FARM				\$ 63,372.00
TOTAL FIRST CROP MARKET INCOME	450.0	ACRES	\$ 620.40	\$ 279,180.00
TOTAL SECOND CROP MARKET INCOME	225.0	ACRES	\$ 142.40	\$ 32,040.00
TOTAL RICE INCOME FOR FARM				\$ 311,220.00
TOTAL FIRST CROP DIRECT EXPENSES	450.0	ACRES	\$ 593.32	\$ 266,994.00
TOTAL SECOND CROP DIRECT EXPENSES	225.0	ACRES	\$ 102.46	\$ 23,053.50
TOTAL FIRST CROP RESIDUAL EXPENSES	450.0	ACRES	\$ 41.52	\$ 18,684.00
TOTAL SECOND CROP RESIDUAL EXPENSES	225.0	ACRES	\$ 7.12	\$ 1,602.00
TOTAL DIRECT AND RESIDUAL EXPENSES FOR FARM				\$ 310,333.50
TOTAL FIXED EXPENSES FOR FARM				\$ 31,164.75
MAXIMUM RENTAL RATE PER BASE ACRE TO COVER DIRECT EXPENSES				\$ 140.91
MAXIMUM RENTAL RATE PER BASE ACRE TO COVER DIRECT AND RESIDUAL EXPENSES				\$ 107.10
MAXIMUM RENTAL RATE PER BASE ACRE TO COVER ALL EXPENSES				\$ 55.16

The results shown above in Table 3 are representative of the dilemma faced by producers and landlords involved in rice production in the Texas Coastal Bend. In this representative case, the expected program payments on this farm are \$101.87 per base acre of rice. Given the cost and return structure for a farm with a 450-acre rice enterprise, the maximum per acre rental rate that could be paid and all expenses covered would be \$55.16 per acre. This represents scenario where a producer paying the \$101.87 per acre, which the landlord is “guaranteed” from direct program payments, would not be able to generate enough revenue to cover all expenses. The maximum rental rate to cover direct and residual expenses, which in this case is all costs other than those specified for capital recovery on machinery, is \$107.10 per acre. This is a range where many operations are currently operating, in a situation where the rice enterprise is “living off depreciation” of the equipment complement.

### **Conclusions**

This paper describes how new techniques such as video-conferencing technology can be used to help in traditional Extension farm management work to cut education costs and provide better service to clientele. This paper also shows how decision support aids can be developed to aid landlords and producers in making sustainable land tenure arrangements. This paper describes how a representative rice farming operation in the Texas Coastal Bend faces a situation where changes must be made to the enterprise cost structure to insure long term viability.

## References

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