

## IMPACTS OF INCREASED ENERGY COSTS ON LEASE AGREEMENTS

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### Abstract

As energy prices increase, agricultural production costs will increase, especially for fuel, irrigation, and fertilizer. Considering irrigated cotton production in the Southern High Plains of Texas, share lease agreements traditionally have not included these costs in the landlord's share of expenses. As these energy-related expenses increase disproportionately to other production costs, landowners and operators must reconsider lease agreements in order to ensure an equitable lease arrangement. Using Texas Farm Assistance data, this study will consider lease arrangements with different shares for fuel, irrigation pumping costs, and fertilizer and how each will impact the net returns for the landowner and operator with irrigated cotton in the Southern High Plains of Texas.

### Introduction

Energy prices have been climbing, especially in the wake of Hurricanes Katrina and Rita in August and September 2005. The spikes in price as a result of the damage to production, refining, and distribution systems in the Gulf of Mexico region were huge and caused immediate concern as to the availability and prices of gasoline, diesel, and natural gas. The Energy Information Agency (EIA) projections show price levels returning to lower levels by the Spring of 2006 but not to the levels experienced in the Summer of 2005 (Yates and Pate, 2005).

As energy prices soared, so did the projections for costs of production for agricultural products across the country. This paper deals with the energy price impacts on the costs of production for irrigated cotton in the Southern High Plains of Texas and the implications for share lease agreements. We first consider the outlook for energy prices for the 2006 growing season, use those prices to project a 2006 enterprise budget, compare the results with 1995, and finally consider the impacts of increasing energy costs on an equitable share lease for 2006.

### Data

The Energy Information Agency reported national average prices for regular gasoline and diesel at \$2.19 per gallon and \$2.26 per gallon, respectively, in the second quarter of 2005 and projected peak prices of \$2.58 and \$2.72 in the fourth quarter of 2005. The prices are expected to decline to near \$2.50 for both gasoline and diesel by the second quarter of 2006. The average price for natural gas as reported at the Henry Hub was \$7.14 per mcf in the second quarter of 2005, rising to a peak of \$12.26 in the fourth quarter of 2005, and is projected to decline to a price near \$8 by the second quarter of 2006.

Fertilizer prices have also climbed as energy prices have increased, especially natural gas prices. Natural gas comprises 70-90% of the cost of nitrogen fertilizer production (Wenzel, 2004), therefore, fertilizer prices tend to follow natural gas prices (Wells and Gaffigan, 2002; Wells and Gaffigan, 2003). Using a linear relationship between the monthly average wellhead price of natural gas (Energy Information Agency, 2005) and the monthly average prices of ammonia (Yara, 2005), the following relationship was found:

$$P_A = 16.95 + 37.515 P_{NG}$$

where  $P_A$  is the price of ammonia and  $P_{NG}$  is the price of natural gas. The price of ammonia was nearly \$277 per ton in the second quarter of 2005. The estimated price spiked near \$400 in the fourth quarter of 2005 and is expected to retreat to near \$300 in the second quarter of 2006.

### Results

An enterprise budget was developed for 2006 irrigated cotton on the South Plains of Texas using fuel and fertilizer prices forecasted for 2006. The results showed that direct expenses are forecast to be \$716 per acre and fixed expenses at \$162 per acre for a total expense of \$879 per acre. This value includes non-cash ownership costs and opportunity costs for land and management. At a yield of 1500 pounds per acre and a price of \$0.52 per pound, the net income above all costs was \$21 per acre. If the yield is nearer a normal yield of 1000 pounds per acre, the net income would be -\$203 per acre.

In this case, direct expenses were 80% of total expenses and fuel expenses including gasoline, diesel, and natural gas, were 30 % of direct expenses. In comparison, 1995 direct expenses were \$396 per acre and fixed expenses

were \$105 per acre with direct expenses being 79% of total expenses and fuel expenses 14% of direct expenses. All other direct expenses excluding fuel have increased about 3% per year since 1995 while fuel expenses have increased an average of 12% per year, contributing significantly to the increased proportion of direct expenses in 2006 as compared to 1995.

Cost of production estimates figure significantly into the development of an equitable share lease agreements. An equitable share lease agreement considers all contributions made by the renter and landlord and shares income in a similar proportion (Duketter, Kastens, and Outlaw, 1999). A common share lease agreement in the Texas South Plains area is 75/25 with the renter providing 75% of the contribution, mostly management and production expenses, and receiving 75% of the revenue while the landlord provides 25% of the contribution, mostly land and land related inputs, and receiving 25% of the revenue. In the case for this study, the landlord also shares in the cost of yield-enhancing inputs such as fertilizer, clean-up herbicides, insecticides, harvest and ginning, crop insurance, and Boll Weevil Program assessments. The budget also includes a land cost of \$30 per acre in 1995 and \$50 per acre in 2006 and a management cost of \$15 per acre in 1995 and \$25 per acre in 2006.

In the 1995 budget, the revenue was shared at 75/25, direct expenses were shared at approximately 80/20, and fixed expense at 55/45; resulting in a total expenses proportion of 75/25 and net income shared at the same 75/25 proportion. In 2006, with no adjustment in the share lease arrangement, the revenue was shared at 75/25, the direct expenses at 86/14, fixed expenses at 50/50, resulting in total expense proportion of 80/20 and net income of -\$100 with the net income for the renter at -\$103 and the landlord at +\$3. These values include \$25 for management and \$50 for land cost resulting in returns to land and management of -\$78 for the renter and +\$53 for the landlord. Although other factors are included in this analysis, energy prices in the form of fuel and fertilizer costs have a major role in the increase in direct costs of production.

#### **Conclusions and Implications.**

Although other input costs have risen at near the inflation rate of 4% since 1995, fuel and energy-related inputs such as fertilizer and chemicals have increased at a rate of nearly 12% per year. This increase in the costs of production inputs has affected the proportion of contribution between renter and landlord in the equitable share lease agreements. The decline in cotton prices has exacerbated the problem, thus skewing the net income going to the renter and landlord in a significant manner. Although share lease agreements are slow to change over time and are generally unresponsive to changes in production (Dhuyvetter, Kastens, and Outlaw, 1999), conditions may be present for a renter or landlord to consider renegotiation of the agreement. An issue to consider that was beyond the scope of this study is the impact of farm program payments on the total income of the renter and landlord. Each landlord/renter relationship is unique as are production costs and business goals. Renegotiating share lease agreements may not be advisable for all landlords and renters, but with the current trends of increasing energy costs and decreasing cotton prices, this may be the time to consider renegotiation of equitable share leases (Smith, 2005).

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