

# Crop-Share and Cash Rent Lease Comparisons

## Version 1.6

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Spreadsheet can be found at  
[http://www.agecon.purdue.edu/extension/pubs/farmland\\_values.asp](http://www.agecon.purdue.edu/extension/pubs/farmland_values.asp)

### Introduction

This spreadsheet is designed to assist with a comparison of expected operator and landowner returns from crop-share and cash rent leases. The estimated returns are calculated using low, medium, and high price and yield estimates for each crop considered. The expected return for both the operator and landowner are presented.

Two returns are estimated for the tenant or operator. The first, total revenue less variable costs, represents the return that remains after direct production or variable costs (seed, fertilizer, chemicals, etc.) are subtracted from revenues. This return is often referred to as the contribution margin. For the operator, this represents the return to the machinery investment, unpaid operator labor, management, and risk. The second return represents the net return after all expenses except management are subtracted from revenues. This return can be thought of as the return to management and risk.

Two returns are also calculated for the landowner. The first is again total revenue less variable costs. This represents the return that remains after direct production costs have been subtracted from revenues and represents the return to unpaid owner labor, management, the investment in land, and risk. The second return is the net return that remains after variable and fixed costs associated with the land investment have been subtracted. This return is an estimate of the residual return to the land investment and risk.

Example input data, estimated returns, and summary tables from the spreadsheet are presented at the end of this document.

### Using the Spreadsheet

The spreadsheet contains four sections: 1) data describing the crop-share and cash rent leases, 2) results indicating the estimated returns for the tenant and landowner under each lease type, 3) summary tables comparing net returns from the crop-share and cash rent alternatives, and 4) calculations. These sections are identified by the tabs at the bottom of the spreadsheet. You can move from section to section by clicking on the desired tab

To use the spreadsheet, data describing the situation must be provided. The results indicate the expected outcome under the assumed prices, yields, and costs. Since there is uncertainty about these items, it is likely that various scenarios or “what if” situations will need to be

explored. This is where the spreadsheet tool is most helpful.

Printing the input and results of the spreadsheet can be accomplished by using the print function contained in Excel.

## Data Sheet

The data section of the spreadsheet has been divided into six types of input information. The first gathers information about the crops to be grown, the expected yields and expected prices. The second gathers information about the production costs for each crop. The third gathers information about fixed or overhead costs for the tenant and landowner. The fourth section gathers information about how the revenues and expenses will be shared under a crop-share lease. The fifth section gathers information about cash payments made by the operator to the landowner under a crop-share lease. The final section asks for the fixed cash rent to be paid by the tenant under a cash rent lease.

The spreadsheet has been protected to prevent the many formulas contained in the spreadsheet from being accidentally changed. Cells with blue text are cells that can be modified. If it becomes necessary to change one of the other cells of the spreadsheet, it will be necessary to unprotect the spreadsheet.

### Crops, Acreage, Yield, Prices, and Direct Government Payments

Crop Name	Crop names can be changed by replacing the current crop name. Enter up to five crops per farm.
Is this a double-crop (Y/N)?	Enter a Y or N under each crop. Indicate Y for only the second crop in a double crop situation. For example, when raising wheat and double-crop soybeans, wheat would be labeled with a “N” and the double-crop soybeans would be labeled with a “Y.”
Acres planted	Enter the number of acres per crop
High crop yield (unit/acre)	Enter an expected high yield for each crop
Medium crop yield (unit/acre)	Enter an expected medium yield for each crop
Low crop yield (unit/acre)	Enter an expected low yield for each crop
High crop price (\$/unit)	Enter an expected high price for each crop
Medium crop price (\$/unit)	Enter an expected medium price for each crop
Low crop price (\$/unit)	Enter an expected low price for each crop

U.S. Government's direct payment (total \$) Enter the total direct payment for the farm in dollars. This spreadsheet makes the assumption that commodity prices will remain above target prices. This means that the only price support received will be direct payments. Since, Congress is in the process of writing a new Farm Bill, it will be important to monitor its progress in planning for the 2008 crop year.

**Production and Storage Variable Costs (\$/acre)**

These expenses should represent the total (operator plus landowner) production or variable costs per acre for each crop. The division of these expenses for a crop-share lease will be entered later.

Fertilizer	Enter the total cost per acre.
Lime	Enter the total cost per acre. Lime is considered a landowner expense in the spreadsheet. If lime is an operator expense, enter the lime cost with the other fertilizer cost and enter a zero here.
Seed	Enter the total cost per acre.
Herbicides	Enter the total cost per acre.
Insecticides	Enter the total cost per acre.
Machinery fuel & repairs	Enter the total cost per acre.
Custom work and hired labor	Enter the total cost per acre.
Crop insurance	Enter the total cost per acre.
Interest and other expenses	Enter the total cost per acre.
Drying charge (\$/bushel)	Enter the cost per BUSHEL for each crop
Storage handling charge (\$/bushel)	Enter the cost per BUSHEL for each crop
Landowner payments to tenant	Enter the payment per acre for each crop, if applicable. These payments are made under both the crop-share and cash rent lease.
Tenant payments to landowner	Enter the payment per acre for each crop, if applicable. These payments are made under both the crop-share and cash rent lease.

**FIXED COSTS: MACHINERY OWNERSHIP, UNPAID LABOR, AND LAND OWNERSHIP**

Operator costs:	
Machinery ownership expenses	Enter per acre cost for machinery depreciation, property taxes, insurance, and interest on the investment in machinery for the operator/tenant.
Unpaid labor expenses	Enter per acre cost for unpaid operator and family labor.

Grain Storage and Handling Facilities	Enter per acre cost for grain storage and handling depreciation, property taxes, insurance, and interest on the investment in grain storage and facilities for the operator/tenant.
Landowner:	
Unpaid labor expenses	Enter cost per acre
Land ownership costs	Enter per acre cost associated with owning real estate. These expenses could include some of the following: property taxes, insurance, drainage repairs, fence repairs, etc. Do not include long-run fertility expenses such as lime. These expenses have been entered as variable production expenses.
Grain storage and handling facilities	Enter per acre cost for such things as repairs, depreciation, insurance, property taxes, and interest on the investment in these items.

## **DIVISION OF REVENUES AND EXPENSES FOR CROP-SHARE LEASE**

If estimates for a crop-share lease are desired, the Division of Revenues and Expenses for Crop-Share Lease must be completed. The percentages for the revenue represent the percentage of the revenue that the tenant will receive. The cost percentage represents the percentage of the total per acre cost the tenant will pay.

## **CROP-SHARE LEASE CASH PAYMENTS**

This section allows cash payments associated only with a crop-share lease to be entered. Some crop-share leases also include cash payments made by the operator to the landowner. This might include the rental payment for items such as grain bins. In some areas, it is common for crop-share leases to include a cash payment referred to as a “privilege” rent. In other cases, some crops such as forage crops are produced under cash rent while crops with readily accessible markets such as corn and soybeans are produced under crop-share provisions.

## **CASH RENT LEASE**

If estimates for a fixed cash rent lease are desired, the amount of cash rent must be entered. The spreadsheet construction assumes that the operator pays all crop production costs except for lime and receives all crop income. The operator receives the government payment. Lime expense is paid by the landowner. In some areas, the cost of lime is paid by the operator. If this is the case, set the lime expense in the spreadsheet to zero and add this expense to fertilizer cost.

## Results Sheet

The spreadsheet generates results for each lease scenario. Before accepting the numbers generated by the spreadsheet, it is important to understand how these numbers are developed. The *Results Sheet* provides detailed calculations for the medium price and medium yield situation. The purpose of this detail is to illustrate the calculations made in the spreadsheet.

The results for each lease type are divided into two major parts — one for the operator and one for the landowner. Each part has several sections. The first section presents revenue and variable cost for each crop. Revenues are based on medium prices and medium yields. The contribution margin, revenue minus variable cost, is calculated for each crop. These values are totaled for the farm. Notice for example that cash rent paid by the operator is deducted along with variable expenses to derive the operator return above variable costs for a cash rent lease. The direct government payment is included only in the total column. Fixed costs are determined and subtracted from the total contribution margin to obtain the net return. The net return represents the return to management and risk for the tenant and the return to land and risk for the landowner.

Information about the sensitivity of the gross margin and net return to changes in yield and price is provided. Low, medium, and high prices and yields are used to develop a matrix of nine possible outcomes.

## Summary Sheet

The final section of results presents two summary tables. The first summary table compares the net return to the operator/tenant's management. The returns for both leases are presented in the table. The return is provided for each price and yield combination.

The second summary table compares the net return for the landowner. This return represents the return to land. Again the return for both leases is presented in the table.

## Calculations Sheet

The *Calculations Sheet* provides additional information about the calculations that are made. The numbers on this sheet are intermediate calculations that can be used to aid in checking to be sure that calculations are correctly performed. Once the calculations are understood, the summary tables showing the estimated returns will likely receive the most attention.

## Management information

In addition to the calculations, the *Results Sheet* provides management information. One item helpful when making management decisions is the Revenue less Variable Costs for each crop. This so-called contribution margin indicates which crops are providing the largest contribution to the payment of overhead costs. To make the best overall return in the farming, it is important to focus on producing those crops with the largest contribution margins.

There is always uncertainty about prices and yields. The *Results Sheet* contains two tables that indicate the expected return for nine different price and yield combinations. One table presents the estimated return after subtracting variable costs. This table provides an estimate of the return available to pay fixed costs given the specified prices, yields, and crop mix. The other table presents the estimated return after subtracting both variable and fixed costs. For the operator, this table provides the estimated return to operator management and risk. For the landowner, this table provides the estimated return to land. These results illustrate how sensitive the return is to changes in prices and yields. By changing the acres of each crop, it is possible to evaluate how changes in the crop mix influence the return.

In addition to the estimated return, it is important to recognize that some price-yield combinations may be more common than others. In general, higher yields are associated with lower prices. The reverse is also true – lower yields are often associated with higher prices. But other combinations are also possible. For an individual farm, it is possible to be subjected to a localized drought where your yields are low but yields elsewhere are average or above average. In this case, the combination of low yield and low or medium price might be possible. While any of the price and yield combinations is possible, it is not likely that they are all equally likely. The most important thing is that the prices and yields reflect your expectations about the range of possible outcomes.

The *Summary Sheet* presents the net return numbers in a side-by-side comparison for the two leases for each yield and price combination.

**Figure 1. Example data for crop-share & cash rent lease comparison**

## Crop-Share and Cash Rent Lease Comparisons Version 1.6

**This version is intended for use only when crop market prices are expected to stay above government target prices. Thus revenues from countercyclical or loan deficiency payments aren't expected.**

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Analysis prepared for: Exempl  
Date 8/31/2007

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Provide the following input for all lease

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### CROPS, ACREAGE, YIELD, PRICES, AND DIRECT GOVERNMENT

	CORN	BEAN	WHEA	D-	OTHE	Cropland
Is this a double crop (Y/N)?	N	N	N	N	N	Total
Acres	100.0	100.0	0.0	0.0	0.0	200.0
High crop yield	187.0	59.0	0.0	0.0	0.0	
Medium crop yield	156.0	49.0	0.0	0.0	0.0	
Low crop yield (unit/acre)	125.0	39.0	0.0	0.0	0.0	
High crop price (\$/unit)	4.00	9.60	0.00	0.00	0.00	
Medium crop price (\$/unit)	3.40	8.16	0.00	0.00	0.00	
Low crop price (\$/unit)	3.00	7.20	0.00	0.00	0.00	
U.S. Government's direct payment (total \$)						\$ 4,000.00

### PRODUCTION AND STORAGE VARIABLE COSTS (\$/acre)

Enter the cost per acre for each item except drying and storage. For drying and storage, enter the cost per bushel. These costs should reflect the total cost (operator plus landowner) of each item. This information is used in all lease

	CORN	BEAN	WHEA	D-	OTHE
	89.00	38.00	0.00	0.00	0.00
	4.00	0.00	0.00	0.00	0.00
Seed	46.00	45.00	0.00	0.00	0.00
	34.00	15.00	0.00	0.00	0.00
	20.00	0.00	0.00	0.00	0.00
Machinery fuel & repairs	29.00	14.00	0.00	0.00	0.00
Custom work & hired	0.00	0.00	0.00	0.00	0.00
Crop insurance	19.00	10.00	0.00	0.00	0.00
Interest and other	24.00	11.00	0.00	0.00	0.00
Drying charge (\$/yield unit)	0.150	0.000	0.00	0.00	0.00
Storage handling charge (\$/yield)	0.020	0.020	0.02	0.02	0.00
Landowner payments to operator	0.00	0.00	0.00	0.00	0.00
Operator payments to	0.00	0.00	0.00	0.00	0.00

**Figure 1. (continued)**

FIXED COSTS : MACHINERY OWNERSHIP, UNPAID LABOR, AND LAND

Operator costs:	per	Tota
Machinery ownership expenses	43	8600
Unpaid labor expenses	30	6000
Grain Storage and Handling Facilities	9	1800
	per	Tota
Unpaid labor expenses	0	0
Land ownership costs	20	4000
(Property taxes, insurance, maintenance, etc.)		
Grain storage and handling	9	1800

Provide the following input for each lease type you wish to evaluate.

DIVISION OF REVENUES AND EXPENSES FOR CROP-SHARE LEASE  
ENTER OPERATOR SHARE (%)

For each item listed below, enter the percentage that the operator will receive or the percentage that the operator will pay under a crop-share lease.

REVENUE	CORN	BEANS	WHEAT	D-	OTHE	DIRECT GOVERNMENT PAYMEN
Crop income	50	50	50	50	0	50
PRODUCTION AND STORAGE COST						
	50	50	50	50	50	
	0	0	0	0	0	
Seed	50	50	50	50	50	
Herbicides	50	50	50	50	50	
	50	50	50	50	50	
Machinery fuel & repairs	100	100	100	100	100	
Custom work & hired labor	100	100	100	100	100	
Crop insurance	50	50	50	50	50	
Interest and other	50	50	50	50	50	
Drying charge	50	50	50	50	50	
Storage	50	50	50	50	50	

CROP-SHARE LEASE CASH

In some crop-share leases, cash payments are made by the operator to the landowner for the use of buildings, a privilege rent, or for other purposes. Enter the per acre amount of these cash payments.

Cash payments	\$0	\$0	\$0	\$0	\$0
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CASH RENT

This agreement specifies the total cash rent payment to be made by the operator. The operator pays all crop production costs except for lime and receives all crop income. Lime expense is paid by the

Cash Rent	175
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**Figure 2. Results for example problem**

**CROP-SHARE LEASE**

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**OPERATOR SHARE OF REVENUES AND EXPENSES UNDER CROP SHARE LEASE  
WITH MEDIUM PRICE AND YIELD**

	CORN	BEANS	WHEAT	D-BEAN	OTHER	Total
<b>Crop revenue</b>	\$ 26,520	\$ 19,992	\$ -	\$ -	\$ -	\$ 46,512
\$ per acre	\$ 265	\$ 200	\$ -	\$ -	\$ -	\$ 233
<b>Cash payments from landowner</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ per acre	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>U.S. Government's direct payment</b>						\$ 2,000
<b>Total revenue</b>	<hr/>					\$ 48,512
\$ per acre						\$243
<b>Variable costs</b>	\$ 15,826	\$ 7,399	\$ -	\$ -	\$ -	\$ 23,225
\$ per acre	\$ 158	\$ 74	\$ -	\$ -	\$ -	\$ 116
<b>Revenue less variable costs</b>	<hr/>					\$ 25,287
\$ per acre	\$ 107	\$ 126	\$ -	\$ -	\$ -	\$ 126
<b>Fixed costs : total acreage</b>						\$ 16,400
\$ per acre						\$ 82
<b>Return to management : total acreage</b>						\$ 8,887
\$ per acre	<hr/>					\$ 44

**SENSITIVITY ANALYSIS**

Per acre return after subtracting variable costs:

Operator share

Yields	Prices		
	Low	Medium	High
Low	\$ 59	\$ 81	\$ 114
Medium	\$ 99	\$ 126	\$ 167
High	\$ 139	\$ 172	\$ 221

Per acre return to management after subtracting variable costs and

\$ 82.00 per acre for selected fixed costs:

Operator share

Yields	Prices		
	Low	Medium	High
Low	\$ (23)	\$ (1)	\$ 32
Medium	\$ 17	\$ 44	\$ 85
High	\$ 57	\$ 90	\$ 139

**Figure 2. (continued)**

**LANDOWNER SHARE OF REVENUES AND EXPENSES UNDER CROP-SHARE LEASE  
WITH MEDIUM PRICE AND YIELD**

	CORN	BEANS	WHEAT	D-BEAN	OTHER	Total
<b>Crop revenue</b>	\$ 26,520	\$ 19,992	\$ -	\$ -	\$ -	\$ 46,512
\$ per acre	\$ 265	\$ 200	\$ -	\$ -	\$ -	\$ 233
<b>Cash payments from operator</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ per acre	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>U.S. Government's direct payment</b>						\$ 2,000
<b>Total revenue</b>	<hr/>					\$ 48,512
\$ per acre						\$ 243
<b>Variable costs</b>	\$ 13,326	\$ 5,999	\$ -	\$ -	\$ -	\$ 19,325
\$ per acre	\$ 133	\$ 60	\$ -	\$ -	\$ -	\$ 97
<b>Revenue less variable costs</b>	<hr/>					\$ 29,187
\$ per acre	\$ 132	\$ 140	\$ -	\$ -	\$ -	\$ 146
<b>Fixed costs : total acreage</b>						\$ 5,800
\$ per acre						\$ 29
<b>Return to management : total acreage</b>						\$ 23,387
\$ per acre	<hr/>					\$ 117

**SENSITIVITY ANALYSIS**

Per acre return after subtracting variable costs:

Landowner share

Yields	Prices		
	Low	Medium	High
Low	\$ 79	\$ 99	\$ 131
Medium	\$ 120	\$ 146	\$ 186
High	\$ 161	\$ 193	\$ 241

Per acre return to land after subtracting variable costs and

\$ 29 per acre for selected fixed costs:

Landowner share

Yields	Prices		
	Low	Medium	High
Low	\$ 50	\$ 70	\$ 102
Medium	\$ 91	\$ 117	\$ 157
High	\$ 132	\$ 164	\$ 212

**Figure 2. (continued)**

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**FIXED CASH RENT**

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**OPERATOR CROP REVENUES AND EXPENSES UNDER FIXED CASH RENT LEASE  
WITH MEDIUM PRICE AND YIELD**

	CORN	BEANS	WHEAT	D-BEAN	OTHER	Total
<b>Crop revenue</b>	\$ 53,040	\$ 39,984	\$ -	\$ -	\$ -	\$ 93,024
\$ per acre	\$ 530	\$ 400	\$ -	\$ -	\$ -	\$ 465
<b>Cash payments from landowner</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ per acre	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>U.S. Government's direct payment</b>						\$ 4,000
<b>Total revenue</b>						\$ 97,024
\$ per acre						\$ 485
<b>Variable costs</b>	\$ 28,752	\$ 13,398	\$ -	\$ -	\$ -	\$ 42,150
\$ per acre	\$ 288	\$ 134	\$ -	\$ -	\$ -	\$ 211
<b>Rent</b>						\$ -
<b>Revenue less variable costs</b>	\$ 24,288	\$ 26,586	\$ -	\$ -	\$ -	\$ 54,874
\$ per acre	\$ 243	\$ 266	\$ -	\$ -	\$ -	\$ 274
<b>Fixed costs : total acreage</b>						\$ 16,400
\$ per acre						\$ 82
<b>Return to management : total acreage</b>						\$ 38,474
\$ per acre						\$ 192

**SENSITIVITY ANALYSIS**

Per acre return after subtracting variable costs:

Operator share

Yields	Prices		
	Low	Medium	High
Low	\$ 140	\$ 184	\$ 249
Medium	\$ 220	\$ 274	\$ 356
High	\$ 299	\$ 365	\$ 464

Per acre return to management after subtracting variable costs and

\$ 82 per acre for selected fixed costs:

Operator share

Yields	Prices		
	Low	Medium	High
Low	\$ 58	\$ 102	\$ 167
Medium	\$ 138	\$ 192	\$ 274
High	\$ 217	\$ 283	\$ 382

**Figure 2. (continued)**

**LANDOWNER REVENUES AND EXPENSES UNDER FIXED CASH RENT LEASE  
WITH MEDIUM PRICE AND YIELD**

	CORN	BEANS	WHEAT	D-BEAN	OTHER	Total
<b>Rent income</b>						\$ 35,000
\$ per acre						\$ 175
<b>Cash payments from operator</b>						\$ -
<b>Total revenue</b>	<hr/>					\$ 35,000
\$ per acre	<hr/>					\$ 175
<b>Variable costs</b>	\$ 400	\$ -	\$ -	\$ -	\$ -	\$ 400
\$ per acre	\$ 4	\$ -	\$ -	\$ -	\$ -	\$ 2
<b>Revenue less variable costs</b>	<hr/>					\$ 34,600
\$ per acre	<hr/>					\$ 173
<b>Fixed costs : total acreage</b>						\$ 5,800
\$ per acre						\$ 29
<b>Return to land : total acreage</b>						\$ 28,800
\$ per acre	<hr/>					\$ 144

**SENSITIVITY ANALYSIS**

Per acre return after subtracting variable costs:

Landowner share

Yields	Prices		
	Low	Medium	High
Low	\$ 173	\$ 173	\$ 173
Medium	\$ 173	\$ 173	\$ 173
High	\$ 173	\$ 173	\$ 173

Per acre return to land after subtracting variable costs and

\$ 29 per acre for selected fixed costs:

Landowner share

Yields	Prices		
	Low	Medium	High
Low	\$ 144	\$ 144	\$ 144
Medium	\$ 144	\$ 144	\$ 144
High	\$ 144	\$ 144	\$ 144

**Figure 3. Example summary**

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**Summary Section 1 - Operator's Return to Management**  
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**Net Return To Operator's Management (Per Acre)**

Yields	Prices Received					
	Low		Medium		High	
	Cash Rent	Crop Share	Cash Rent	Crop Share	Cash Rent	Crop Share
Low	\$ (117)	\$ (23)	\$ (73)	\$ (1)	\$ (8)	\$ 32
Medium	\$ (37)	\$ 17	\$ 17	\$ 44	\$ 99	\$ 85
High	\$ 42	\$ 57	\$ 108	\$ 90	\$ 207	\$ 139

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**Summary Section 2 - Landowner's Net Rental Income**  
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**Net Rent Received By Landowner (Per Acre)**

Yields	Prices Received					
	Low		Medium		High	
	Cash Rent	Crop Share	Cash Rent	Crop Share	Cash Rent	Crop Share
Low	\$ 144	\$ 50	\$ 144	\$ 70	\$ 144	\$ 102
Medium	\$ 144	\$ 91	\$ 144	\$ 117	\$ 144	\$ 157
High	\$ 144	\$ 132	\$ 144	\$ 164	\$ 144	\$ 212

Cash rent input by user \$175.