

Traits of Successful Farms: Financial and Production Performance

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Executive Summary

The goal of this session is to provide information about successful farms and diagnostic tools that can be used to assess farm financial performance. Benchmark financial information and computer decision tools are used to illustrate important concepts.

- Accrual net farm income should be used to measure farm profitability. Cash basis income results in average errors of 24%.
- A case example is used to illustrate the potential problems with using cash basis income.
- The concepts and benefits of returns to management are presented.
- Financial performance ratios permit farmers to compare to benchmarks and their own farm over time. Benchmark data on key financial and production performance measures are provided.
- There are many reasons farm performance may not be high. The sources of potential problems can be asset-, liability-, revenue-, or expense-based. Measures for the problem types are reviewed and benchmarks provided.
- Research results are presented on traits of successful farms. Successful farms tend to be larger, own a lower percentage of their acres farmed, exhibit higher yields, and have substantially lower machinery costs. However, successful farms do not tend to receive significantly higher commodity prices.
- A case study is used to illustrate the performance measures and the data needed to identify strengths and weaknesses on a farm operation.
- Software to compare financial data to benchmarks is presented and *FAST* computer tools to assist in decision making are illustrated.



Traits of Successful Farms: Production and Financial Performance

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<http://www.farmdoc.uiuc.edu/>

Objectives

- Discuss alternative measures of success
- Describe diagnostic tools to use in evaluating strengths and weaknesses of a farm
- Provide traits of successful farms
- Mini-case study

What is Success?

**Who are the
Stakeholders/Influencers?**

How to Measure?

What is Success?

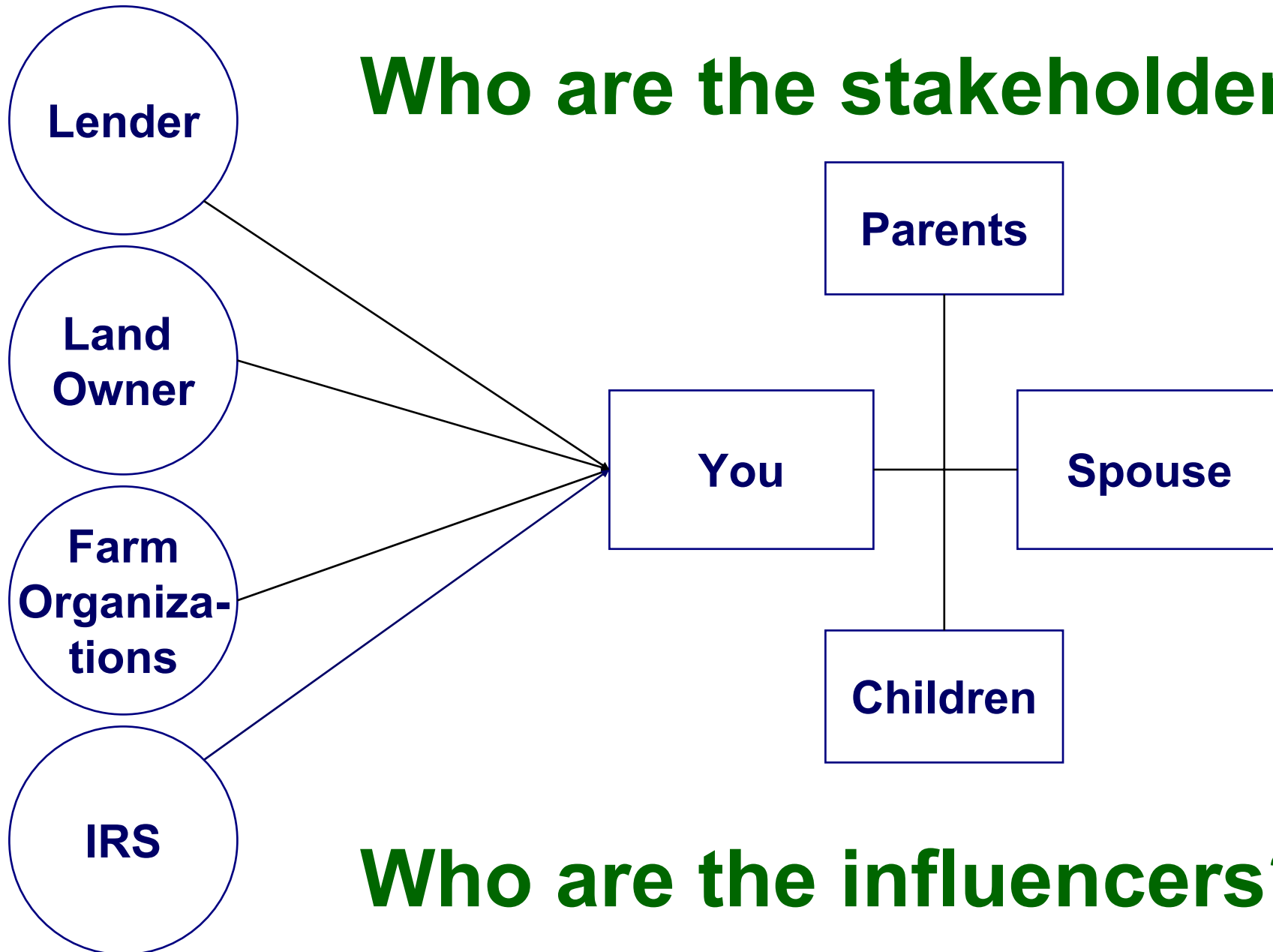
Possible Responses

- Profitability
- Asset and equity growth
- Highest yield
- Land accumulation
- Quality of life
- Machinery size and type

Likely “influenced”
by a Stakeholder



Who are the stakeholders?



Who are the influencers?

Measures of Success

Profitability

1. Net farm income

- **Cash Basis**
schedule F
- **Accrual Basis**
accounts for revenue produced and expenses incurred

2. Management returns

accounts for labor and capital supplied by operator

3. Ratios

profitability relative to investment in the business

Net farm income

- **Cash Basis**

Pros: simple, accessible, “validated” inputs

Cons: **NOT** a good proxy for income

- **Accrual Basis**

Pros: more appropriate measure of profitability

Cons: requires additional computation, some judgment used on price changes in inventory valuation

Schedule F Vs. Accrual Income

Average yearly difference (based on 966 farms)

1995	35%
------	-----

1996	41%
------	-----

1997	34%
------	-----

Average 3-year

difference '95-97	24%
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Like measuring the speed of an Indy Car with an hour glass,

Schedule F (cash basis) is not a reliable indicator of profit.

Key Accrual Adjustments

Schedule F

Accrual Adjustments

Cash Sales

+/- Change in inventories
+/- Change in receivables

Cash Expenses

+/- Change in prepaid expenses
+/- Change in accounts payable
+/- Change in accrued interest



Example Calculations: Blue Handout

FAST Tool
*Schedule F to Accrual
Income Approximation*



<http://www.farmdoc.uiuc.edu/>

Management Returns

Accrual Net Income

-

Opportunity Costs
Of Labor

-

Opportunity Costs
Of Capital

=

Management Returns

Profitability Ratios

Return for a Unit of Investment

- Rate of Return on Assets
- Rate of Return on Equity

Example

Tools to Assess Profitability

- Compare to other similar farms
 - yellow handout
- Compare to your farm over time
 - stability and level
- Identify strengths and weaknesses
- Develop a strategy to adapt/change

Sources of Profitability Problems

Assets

Revenue

Liabilities

Expenses

Assets

Problems

Inefficient use of assets

- too many assets
- wrong mix of assets
- price of assets too high

Measures

$$\text{Asset Turnover} = \frac{\text{VFP (Gross sales)}}{\text{Total Farm Assets}}$$

Machinery Cost per Acre

Machinery Investment per Acre

Problems

- Too much leverage (debt)
- Cost of debt is too high
- Wrong mix of debt

Liabilities

Measures:

$$\frac{\text{Debt}}{\text{Assets}} \text{ \& } \frac{\text{Current Debt}}{\text{Current Assets}} \text{ \& } \frac{\text{Noncurrent Debt}}{\text{Noncurrent Assets}}$$

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Cost of Debt} = \frac{\text{Total Interest Expense}}{\text{Average Total Liabilities}} \text{ or }$$

$$\text{Interest Cost} = \frac{\text{Total Interest Expense}}{\text{Average Total Assets}}$$

Problems

- Low production
- Poor marketing

Revenue

Measures

- Average yield per acre
- Livestock production measures
- Average price received per unit produced
- Profit margin = Net Farm Income / VFP

Problems

- High Crop Costs
- High Machinery Costs
- High Land Rent
- High Interest Costs
- High Other Costs

Expenses

Measures

Profit margin

Cost as a proportion of total income = $\frac{\text{Cost Item}}{\text{VFP (Gross Sales)}}$

Examples : $\frac{\text{Machinery Cost}}{\text{VFP (Gross Sales)}}$ or $\frac{\text{Interest Expense}}{\text{VFP (Gross Sales)}}$

Cost per acre = $\frac{\text{Cost Item}}{\text{Acre}}$

Examples : $\frac{\text{Machinery Cost}}{\text{Acre}}$ or $\frac{\text{Interest Expense}}{\text{Acre}}$

Your Lender's Measures of Success

- Profitability
- Debt Repayment Capacity
- Credit Score
 - Consumer
 - Business
- Management Ability

Remember:
Lenders are always concerned about the downside scenarios.

Benchmark Measures Diagnostic Tables

Green Handout



Research Results

Traits of Successful Farms



Approach

- Sample of 870 FBFM farms
- Certified balance sheets from 1996 to 2000
- Market valuation of assets
- Rank by ROE each year
- Categorize farms into thirds based on ROE

Classification by ROE over Time

Percent of Farms in ROE Groups
FBFM Data, 870 Farms
1996-2000

Number of Years	Low 1/3	Mid 1/3	High 1/3
0 out of 5 years	31%	25%	30%
1 out of 5 years	21%	26%	23%
2 out of 5 years	19%	20%	19%
3 out of 5 years	16%	16%	13%
4 out of 5 years	8%	10%	10%
All 5 years	6%	4%	5%
Total	100%	100%	100%

One Measure of Success

Classify into 1 of 3 groups

- Group 1: High Achievers
In the high 1/3 return group in at least four of five years
- Group 2: Moderate Achievers
Farms that have been in high 1/3 in at least one year and not included in Achiever group
- Group 3: Wait until next year
Never in high 1/3 return group

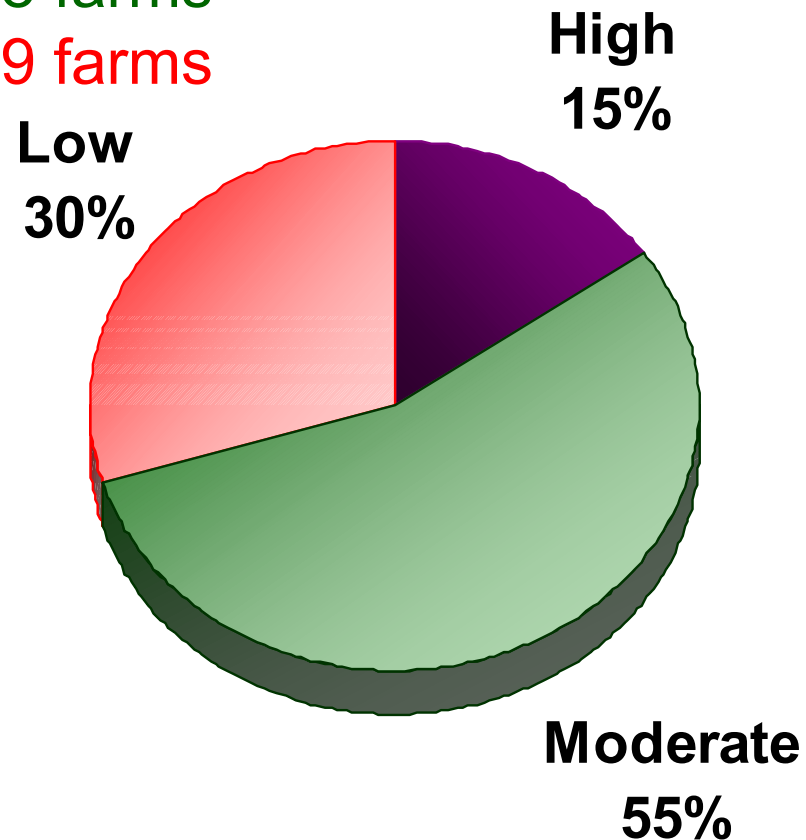
Farms

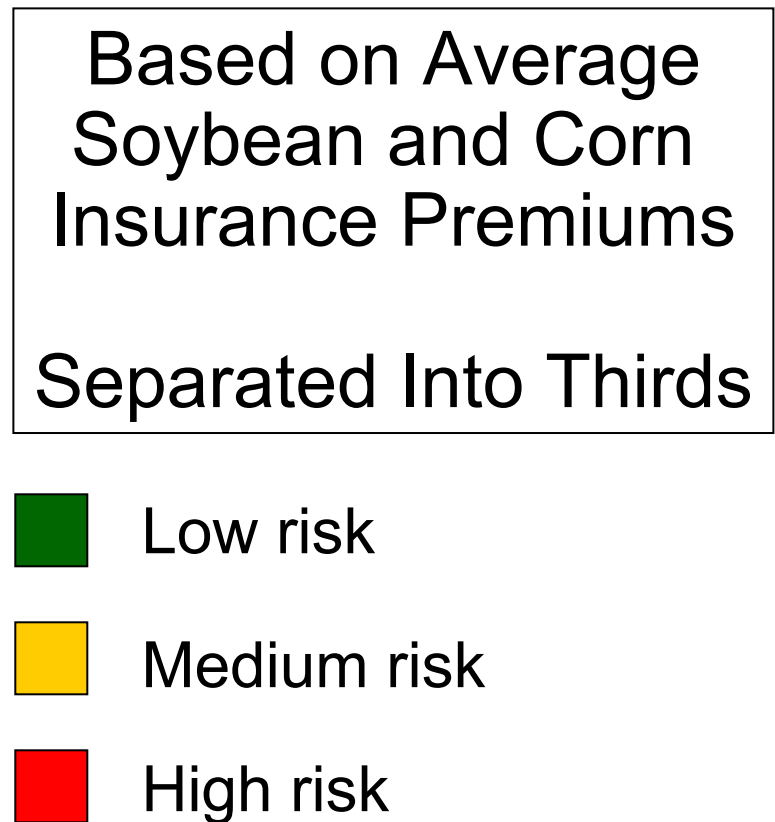
Based on ROE

Group 1: 133 farms

Group 2: 478 farms

Group 3: 259 farms





Characteristics Demographics

	High Achievers	Moderate Achievers	Wait Until Next Year
5 year average			
Farm Size (acres)	1,068	960	692
Value of Farm Production	289,252	251,233	178,774
Age	45	49	53
Soil Rating	85	81	78
% in low risk counties	73%	59%	42%
% in higher risk counties	7%	10%	8%

- Size matters
- Performance differs by location

Characteristics Leasing Components

	High Achievers	Moderate Achievers	Wait Until Next Year
	5 year average		
Tenure (% owned)	0.11	0.16	0.30
Cash Rented Acres/Total Acres	0.29	0.29	0.22
Cash Rented Acres/Total Leased Acres	0.33	0.35	0.31

- Lower ROE as ownership increases
- Cash renting not a distinguishing component
- **Reminder:** Valuation changes not included in ROE

ROE Components

	High Achievers	Moderate Achievers	Wait Until Next Year
	5 year average		
ROE	0.126	0.032	-0.016
Debt to Asset Ratio	0.334	0.325	0.253
ROA	0.108	0.046	0.008
Interest/Assets	0.024	0.025	0.020
Profit Margin	0.227	0.115	0.015
Asset Turnover	0.473	0.361	0.244

- More than a just a tenure issue
- Differences largely driven by ROA – not leverage

Prices and Yields

	High Achievers	Moderate Achievers	Wait Until Next Year
	5 year average		
Average Corn Yield	156	149	143
Average Bean Yield	50	48	46
Average Corn Price	2.29	2.25	2.18
Average Bean Price	6.22	6.20	6.17

- Yield productivity highly related to performance
- Price not as highly related
- Some price differences may be due to location (basis)

Financial Efficiency

	High Achievers	Moderate Achievers	Wait Until Next Year
5 year average			
Operating Cost/VFP	0.56	0.62	0.66
Crop Cost/VFP	0.24	0.26	0.27
Power and Machinery/VFP	0.10	0.11	0.13
Other Expense/VFP	0.22	0.25	0.26
Interest Cost/VFP	0.06	0.07	0.09
Depreciation Cost/VFP	0.11	0.13	0.15

- Cost efficiency is critical
- Interest cost relationship with leverage
- Power and equipment, depreciation costs very important

Operating Costs/Acre

	Return Group		
	High 1/3	Mid 1/3	Low 1/3
FARM COSTS			
Soil Fertility	39	41	42
Pesticides	32	33	34
Seed	22	25	24
Crop Total	\$93	\$99	\$100
Utilities	4	4	5
Machinery Repairs	12	14	17
Machine Hire and Lease	6	6	8
Fuel & Oil	7	7	8
Light Vehicle	1	2	3
Machinery Depreciation	28	30	32
Power & Equipment Total	\$58	\$63	\$73
Drying	7	6	7
Storage	5	4	5
Building Repair and Rent	2	3	4
Building Depreciation	4	5	6
Building Total	\$18	\$18	\$22

Complementary study on management returns: Schnitkey & Lattz: 2001

Operating Costs/Acre, cont.

	----- Return Group -----		
	High 1/3	Mid 1/3	Low 1/3
Labor Unpaid	27	28	43
Labor Paid	5	7	5
Labor Total	\$32	\$35	\$48
Vet, Medicine and Livestock Supplies	1	1	2
Insurance	10	10	11
Miscellaneous	5	5	6
Interest Charge Nonland	32	34	35
Other Costs, Total	\$48	\$50	\$54
Interest Charge	17	22	43
Taxes	4	5	10
Cash Rent	31	40	33
Leasing Cost	52	47	47
Land Total	\$104	\$114	\$133
TOTAL NON-FEED COSTS	\$353	\$379	\$430

Other Measures

	High Achievers	Moderate Achievers	Wait Until Next Year
	5 year average		
FMV Machinery/Tillable Acre	220	262	313
Net Farm Income/Operator Acre	120	77	48
Annual Equity Growth (Mkt. Value)	0.1040	0.0745	0.0539

Too much machinery?



Mini-case Study

Pink Handout



<http://www.farmdoc.uiuc.edu/>

Case Objectives

- Identify
 - 3 major strengths of farm
 - 3 major weaknesses of farm
- Use the Benchmark Reports



Demo of Upcoming Farmdoc tool

Where do I stand
financially?



<http://www.farmdoc.uiuc.edu/>

Finance

Marketing & Outlook

Management

Law & Taxation

AgMAS

Crop Insurance

Decision Central

About farmdoc

Finance

business tools

benchmarks

analysis

reports

ratio calculator

workshops

links



solvency

profitability

repayment capacity

financial efficiency

LIQUIDITY

current ratio
working capital
working capital to value of farm production

current ratio

Interpretation: This ratio (usually expressed as XX:1) indicates the extent to which current farm assets, if liquidated, would cover current farm liabilities. The higher the ratio, the greater the liquidity.

current assets

current liabilities

current ratio

/

=

compare your farm to the



11

average

go

next



About Your Farm

Select from each of the following items to describe your farm. This information will be used for comparison of your farm to the Illinois averages.

Name:

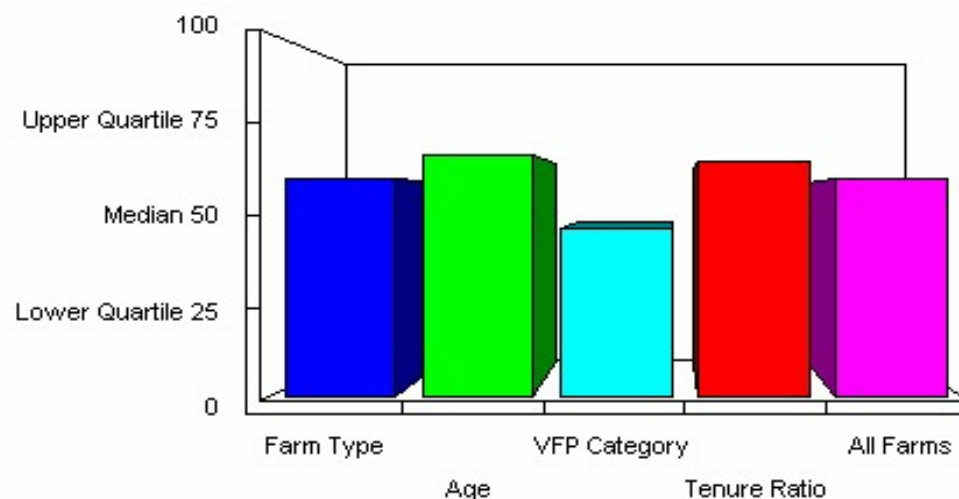
Sales (VFP) Category:

Age:

Farm Type:

Tenure Category (acres owned/acres operated):

Peer Analysis for Current Ratio



		Farm Type	Age	VFP Category	Tenure Ratio	All Farms
		Hbg	Less than 30	Less than \$75000	0 to 10%	
Quantile Values	Top 75 %	3.25	2.39	7.32	2.74	3.47
	Median 50 %	1.64	1.52	2.16	1.37	1.56
	Bottom 25 %	.94	1.01	1.10	.92	.98
Your Farm		2.00	2.00	2.00	2.00	2.00

[Change Information About Your Farm](#)

Adapt Strategies to Change

FAST Decision Tools

- Cash Flow Planning Tool
- Enterprise Analysis
- Machinery Economics
- Lease Analysis
- Lease v Purchase
- Land Purchase Analysis

What direction?

Scenarios

Sensitivity analysis

Costs of production?

Machinery timeliness

Machinery efficiency

Compare cash
and share leases

Evaluate the
profitability of
leasing

How much to bid
for land ?

Summary

- Measures of success
- Diagnostic tools
- Benchmark measures
- Case study