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Financially Resilient Farms

Robert Tigner
Agricultural Systems Economist

U of Illinois Analysis

- Compared farm management characteristics.
- Separated farms into High, Middle and Low profitability groups.
- Looked for farms that were consistently profitable in 2012-2016.
  - What financial differences existed?

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Profitable Farm Characteristics

- Higher revenues
  - From 5-7% higher corn yields, 2-6% higher soybean yields
  - Higher prices: 2-5% higher for corn, 2-4% higher for soybeans
  - So no home runs in the revenue data.

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Profitable Farm Characteristics

- Lower costs in all categories

www.aldermans.com

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Revenue, Costs, and Returns

	2010 to 2012			2014 to 2016		
	Top1/3	Mid 1/3	Diff	Top1/3	Mid 1/3	Diff
Revenue	**$958**	**$870**	**$88**	**$783**	**$731**	**$52**
Direct Costs	$248	$247	**$1**	$270	$276	**-$6**
Power Costs	$98	$115	**-$17**	$118	$128	**-$10**
Overhead Costs	$64	$72	**-$8**	$67	$85	**-$18**
Total Costs	**$409**	**$433**	**-$24**	**$455**	**$488**	**-$33**
Returns	**$549**	**$437**	**$112**	**$328**	**$242**	**$85**

Source: Paulson, 2018

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Production profile of IL farms

- Soil productivity similar
  - High profit farms pay average or less cash rent
- 50/50 corn-soybean rotation
- High Profit farms operate more acres
  - Range is only 200 acres across all groups

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How about NE farms

- NE Farm Business Inc. data
  - Same 568 farms from 2012 to 2016
  - Data separated into pentiles by Net Farm Income

	Avg. Of All Farms	Low 20%	20 - 40%	40 - 60%	60 - 80%	High 20%
Number of farms	568	113	114	113	114	114
Crop Acres						
Total crop acres	1,058	975	646	877	1,144	1,645
Total crop acres owned	314	327	202	256	356	430
Total crop acres cash rented	420	414	270	336	459	622
Total crop acres share rented	323	234	174	285	329	593
Machinery value per crop acre	563	615	567	555	536	552

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Profitability

	Avg. Of All Farms	Low 20%	20 - 40%	40 - 60%	60 - 80%	High 20%
Number of farms	568	113	114	113	114	114
Profitability (cost)						
Rate of return on assets	4.8 %	-5.0 %	-0.8 %	3.5 %	6.0 %	13.3 %
Rate of return on equity	5.3 %	-14.6 %	-3.5 %	3.2 %	7.1 %	17.8 %
Operating profit margin	13.2 %	-18.1 %	-2.4 %	9.6 %	16.5 %	31.0 %
Asset turnover rate	36.3 %	27.7 %	34.6 %	36.3 %	36.2 %	42.7 %

Inefficient use of assets and poor operating profit margin led to low profits.

Efficient use of assets and high operating profit margin led to high profits.

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Wealth

	Avg. Of All Farms	Low 20%	20 - 40%	40 - 60%	60 - 80%	High 20%
Number of farms	568	113	114	113	114	114
Solvency (end of year at cost)						
Number of farms	568	113	114	113	114	114
Total assets	2,975,194	3,127,489	1,559,274	2,145,468	3,044,468	4,993,329
Total liabilities	1,028,730	1,604,710	539,499	562,698	937,236	1,500,470
Net worth	1,946,464	1,522,779	1,019,775	1,582,770	2,107,233	3,492,859
Net worth change	80,772	-190,734	-13,941	42,116	91,310	472,390
Farm debt to asset ratio	37 %	54 %	37 %	29 %	33 %	32 %
Total debt to asset ratio	35 %	51 %	35 %	26 %	31 %	30 %
Change in earned net worth %	4 %	-11 %	-1 %	3 %	5 %	16 %

Poor profits led to lost wealth.

High profits led to wealth increase more than the stock market.

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Ability to cash flow

	Avg. Of All Farms	Low 20%	20 - 40%	40 - 60%	60 - 80%	High 20%
Number of farms	568	113	114	113	114	114
Liquidity & Repayment (end of year)						
Current assets	871,464	1,058,630	375,841	527,572	815,619	1,578,283
Current liabilities	448,685	846,689	219,283	204,892	347,395	626,518
Current ratio	1.94	1.25	1.71	2.57	2.35	2.52
Working capital	422,779	211,941	156,558	322,679	468,223	951,765
Change in working capital	-33,588	-145,240	-66,451	-30,057	-50,948	123,808
Working capital to gross inc	37.8 %	15.6 %	30.5 %	48.4 %	43.7 %	47.8 %
Term debt coverage ratio	1.84	-0.80	0.42	1.46	2.37	5.01
Replacement coverage ratio	1.29	-0.61	0.29	1.01	1.60	3.34
Term debt to EBITDA	1.80	-499.47	3.30	1.73	1.55	0.94

Can't pay debt when due.

Only group that could pay debts on time.

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So what do I do to increase liquidity

- Cost control
- Re-negotiate cash rent
- Reduce capital spending
- Reduce family living
- Increase revenue
- Increase non-farm income
- Re-negotiate loan terms

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Cost of Production

- Tools for calculation
  - Iowa State University: Ag Decision Maker
  - UNL Agricultural Economics Crop Budgets

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Using Financial Analysis

- Ratio Analysis
  - Calculate “industry accepted” ratios for your firm
  - Compare your performance to industry “norms”
  - Farm Financial Standards Council (FFSC)
- Trend Analysis
  - Analyze your financial ratios over a period of time
  - 3-5 years
  - Look for positive & negative trends

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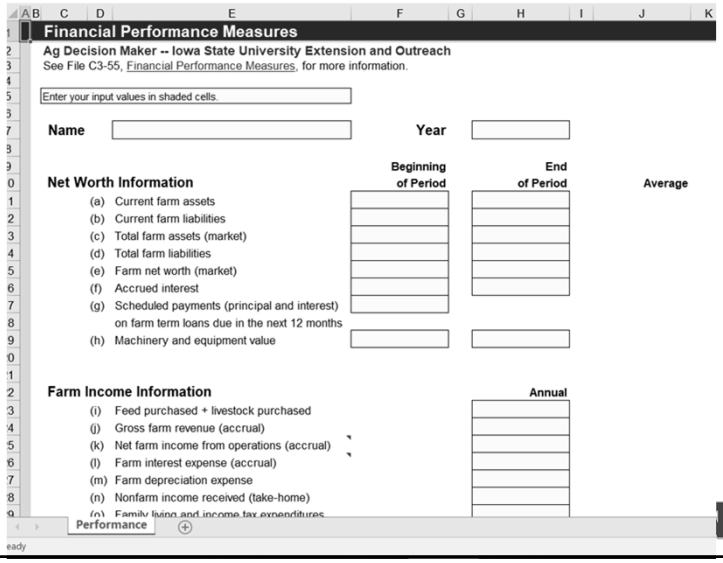
Financial Ratio Calculation

https://www.extension.iastate.edu/agdm/wholefarm/xls/c3-55finperformancemeasures.xlsx



Financial Performance Measures

Ag Decision Maker -- Iowa State University Extension and Outreach
See File C3-55, Financial Performance Measures, for more information.

Enter your input values in shaded cells.

Name **Year**

Net Worth Information	**Beginning of Period**	**End of Period**	**Average**
(a) Current farm assets			
(b) Current farm liabilities			
(c) Total farm assets (market)			
(d) Total farm liabilities			
(e) Farm net worth (market)			
(f) Accrued interest			
(g) Scheduled payments (principal and interest) on farm term loans due in the next 12 months			
(h) Machinery and equipment value			

Farm Income Information	**Annual**
(i) Feed purchased + livestock purchased	
(j) Gross farm revenue (accrual)	
(k) Net farm income from operations (accrual)	
(l) Farm interest expense (accrual)	
(m) Farm depreciation expense	
(n) Nonfarm income received (take-home)	
(o) Family living and income tax expenditures	

Performance

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Documents needed

- **Balance Sheets**
  - **Current Balance Sheet**
  - **3-5 Historic Balance Sheets & Pro forma**
- **Income Statements**
  - **May use tax records as a proxy**
  - **Current Year's Income Statement**
  - **3-5 Year's Historic Income Statements & Pro forma**
    - Can calculate trend analysis

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Limitations of Ratio Analysis

- **Requires good, accurate data/information**
- **Ratios do NOT identify the specific problem**
  - **They point you towards the problem**
- **Ratios may fluctuate during the year**
- **Pogo stick syndrome due to accounting methods**
- **When income & expenses are posted**
- **Requires knowledge of statements and ratios**
- **Requires common sense!!!**

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Liquidity

Liquidity

		Vulnerable		Strong
1. Current ratio	__ . __		1.3	2.0
2. Working capital	$ _____			
3. Working capital to gross revenues	____%		10%	30%

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Solvency

Solvency

4. Farm debt-to-asset ratio	____%	60%	30%
5. Farm equity-to-asset ratio	____%	40%	70%
6. Farm debt-to-equity ratio	__ . __	1.5	0.43

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Profitability

Profitability

7. Net farm income	$ _____	
8. Rate of return on farm assets	____%	4% 8%
9. Rate of return on farm equity	____%	3% 10%
10. Operating profit margin	____%	15% 25%

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Financial Efficiency

Financial efficiency

17. Asset-turnover rate	____%	30% 45%
18. Operating-expense ratio	____%	80% 60%
19. Depreciation-expense ratio	____%	10% 5%
20. Interest-expense ratio	____%	10% 5%
21. Net farm income ratio	____%	10% 20%

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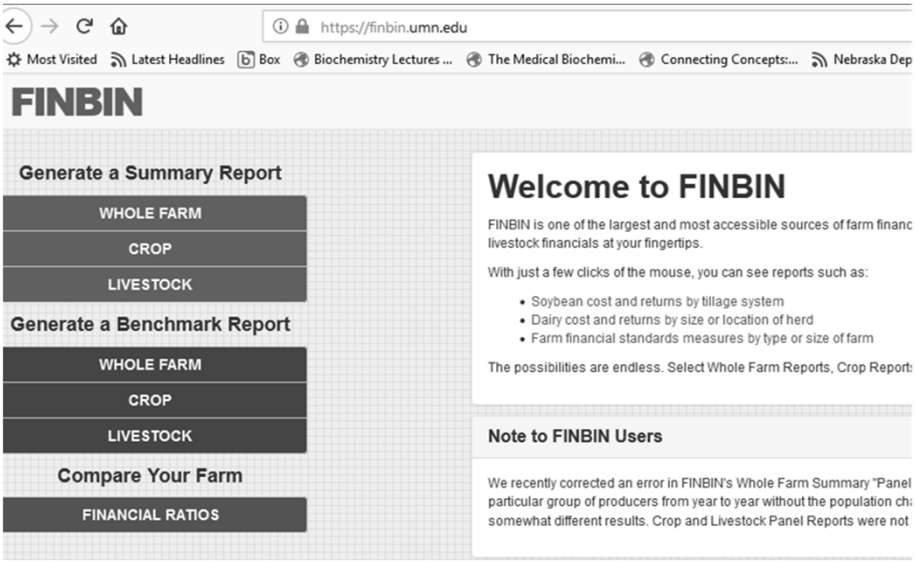
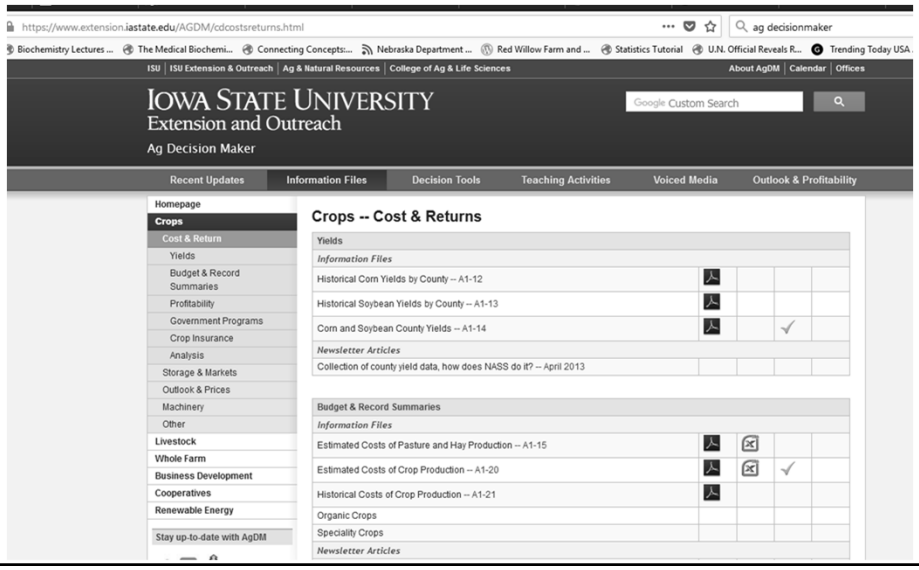
Benchmarking

https://finbin.umn.edu/



Ag Decisionmaker



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Breakeven Worksheets

Crop Production Costs Budgets (13 Decision Tools) Use these decision tools to project the costs and returns of growing:		A1-20	
• Corn following Corn • Corn following Soybean • Corn Silage following Corn • Herbicide tolerant Soybeans following Corn (herbicide tolerant) • Low-till corn following Soybeans • Low-till drilled Soybeans following Corn • Strip till Corn following Soybeans • Strip till Herbicide Tolerant Soybeans following Corn • Alfalfa or Alfafa-grass Hay Budget • Alfalfa or Alfalfa-grass Hay with Oat Companion Crop Budget • Oat or Other Small Grain Budget • Improved Grass Pasture • Improved Grass-legume Pasture			
Breakeven Worksheet for Crops Use this decision tool to find cash-flow requirements per acre and break-even selling prices per bushel or ton for individual crops.		A1-20	
Crop Rotation Summary Use this decision tool to estimate the returns for different crop rotations		A1-20	

UNL Crop Budgets

cropwatch.unl.edu/budgets

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Cost calculation

- Calculate 2 costs
  - Cash flow cost and full economic cost
    - Cash flow costs include all items that are need to fund the checking account
      - Does not include family living
    - Full economic cost includes investment, unpaid labor and management
      - Does not include principal payments, SS or income taxes

Sources

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- Lattz, D. "IFES 2017: Habits of Financially Resilient Farms - Continued." *farmdoc daily*, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, January 24, 2018.
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