

CULTIVATING HEALTHY COMMUNITIES

## Farm Finance and Analysis: Part 2

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## Ag Business Programs

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- Management Education
- Forest Business
- Business Planning
- Transfer Planning
- Applied Research

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# Financial Analysis

Financial Analysis compares trends in

- revenues and expense
- projected to actual cash flow
- Changes in ratios related to solvency, liquidity, profitability and efficiency.



# Analysis Goals

- Assess the business position
- Promote proactive decisions... based on information.
- Embodies “time” and trends



## Analysis Options



- 1<sup>st</sup> Step: Production Based Income Statement
- Horizontal and Vertical Analysis
- Ratio Analysis – Savvy 7
- Enterprise
- Break-even



## Production-based Income S.

Interest Only: principal payments not included

Accrual Adjustments:

- Beginning vs. Ending Inventories
- Accounts Receivable and Accounts Payable

Depreciation: annual “non-cash” cost of wear and tear on assets

Opportunity Cost of Owners: \$40,000 +



## Cash Flow

Cash Receipts	\$200,000
Total Revenue	\$200,000
- Operating Expenses	\$130,000
<b>Net Cash</b>	<b>\$70,000</b>
- Debt Service	\$27,500
- Capital Purchases	\$ 7,500
+ Accrual Income	
- Accrual Expense	
- Depreciation	
<b>NFIFO</b>	
- Owner Draw	\$30,000
<b>Net Earnings</b>	<b>\$5,000</b>



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## Income Statement



Cash Receipts	\$200,000
<b>Total Revenue</b>	<b>\$200,000</b>
- Operating Expenses	\$ 130,000
- Interest (no principal)	\$ 15,000
<b>Net Operating Income</b>	<b>\$ 55,000</b>
+ Accrual Income (A/R)	\$ 8,000
- Accrual Expense	\$ 4,000
- Depreciation	\$ 20,000
<b>NFIFO</b>	<b>\$39,000</b>
- Value of Owner Labor	\$40,000
<b>Net Earnings</b>	<b>- ( \$1,000)</b>



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## Adjustments

	BS 2016	BS 2017	Accrual Change
A/R	\$5,000	\$13,000	+ \$8,000
A/P	\$5,000	\$5,000	----
Inventory: Feed	\$30,000	\$26,000	- \$4,000

## Depreciation

### Straight-line depreciation

Item	Purchase Price Less Salvage	Lifespan	Annual Depreciation
Machinery	\$140,000	10	\$14,000
Equipment	\$ 25,000	5	\$ 5,000
Improvements	\$ 20,000	20	\$ 1,000



## Income Statement

NOT CASH  
BASIS  
ANYMORE

MULTI-YEAR  
LENS

Cash Receipts	\$200,000
Total Revenue	\$200,000
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- Interest (no principal)	\$ 15,000
Net Operating Income	\$ 55,000
+ Accrual Income (A/R)	\$ 8,000
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NFIPO	\$39,000
- Value of Owner Labor	\$40,000
Net Earnings	- ( \$1,000)



## Horizontal and Vertical

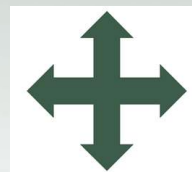
Horizontal Analysis: % Change from Year to Year

$$\frac{\text{Current Year} - \text{Last Year}}{\text{Last Year}}$$

Produce Sales:

$$\frac{\$125,000 - \$108,000}{\$108,000} = + 16\%$$

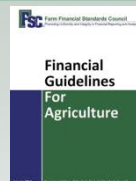
- Cross check an income change with an expense change
- Drag the formula down the statement, thank you Excel!



## Ratio Analysis

- Established farm financial standards

- See the Scorecard
- Requires multiple years of records
- 2 BS, 1 IS, 1 Cash Flow



Liquidity: ability to meet financial obligations as they come due

Solvency: ability to pay all debts if the business sold tomorrow

Profitability: difference between the value of goods produced and the costs (plus resources) to produce them

Efficiency: how effectively the business uses assets to generate income

## Savvy - 7 Ratio Analysis

Concept	Ratio	Calculation
1. Liquidity	Current	Current Asset/ Current Liability
2. Solvency	Debt	Debt / Asset
3. Profitability	Return on Assets	Net Farm Income* / Total Assets

## Savvy - 7 Ratio Analysis

Concept	Ratio	Calculation
4. Investment Efficiency	Turnover	Sales/ Total Assets
5. Operating Efficiency	Operating	Op Expense / Revenue
6. Interest Efficiency	Interest	Interest Expense/ Revenue
7. Machinery Efficiency	New Paint	Machine Value / Acres
Repayment Capacity	Term Debt Coverage (TDC)	

Efficiency Measures can be easily adapted to a key management area



## Sample

**Our Small Dairy Farm**  
Market Balance Sheet, Ag

	Jan 1, 2010	Jan 1, 2011	Jan 1, 2012	Jan 1, 2013
<b>Current Assets</b>				
Cash and drawings	5,000	5,000	5,000	4,000
Accounts receivable	10,000	20,000	30,000	27,000
Crop inventory	24,000	20,000	27,000	21,000
<b>Total current assets</b>	<b>42,000</b>	<b>50,000</b>	<b>70,000</b>	<b>62,000</b>
<b>Intermediate Assets</b>				
Deeding feedstock	191,700	203,100	200,300	208,000
Machinery/equipment	55,000	57,000	60,000	58,000
Tractor vehicles	10,000	1,000	7,000	11,000
Other intermediate assets	7,000	7,000	4,000	10,000
<b>Total intermediate assets</b>	<b>263,700</b>	<b>268,100</b>	<b>269,300</b>	<b>287,000</b>
<b>Long Term Assets</b>				
Land	490,000	490,000	490,000	490,000
<b>Total long term assets</b>	<b>490,000</b>	<b>490,000</b>	<b>490,000</b>	<b>490,000</b>
<b>Total farm assets</b>	<b>755,700</b>	<b>771,600</b>	<b>819,300</b>	<b>839,000</b>
<b>Total personal assets</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total assets</b>	<b>755,700</b>	<b>771,600</b>	<b>819,300</b>	<b>839,000</b>
<b>Current Liabilities</b>				
Accounts payable and other current exp.	-	-	-	500
Principal due within 12 months on term loans	15,407	16,002	17,307	21,000
<b>Total current liabilities</b>	<b>15,407</b>	<b>16,002</b>	<b>17,307</b>	<b>21,500</b>
<b>Intermediate &amp; Long Term Liabilities</b>				
Intermediate loans	12,001	11,001	0,001	10,000
Long term loans	200,000	214,000	200,000	240,000
<b>Total farm liabilities</b>	<b>212,008</b>	<b>225,003</b>	<b>200,308</b>	<b>251,500</b>
<b>Total liabilities (including deferred)</b>	<b>227,415</b>	<b>241,005</b>	<b>217,615</b>	<b>272,500</b>
<b>Personal liabilities</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total liabilities</b>	<b>227,415</b>	<b>241,005</b>	<b>217,615</b>	<b>272,500</b>
<b>Assets - Liabilities = Net Worth</b>				
Assets - Liabilities	528,285	530,595	601,690	566,500
Personal - Liabilities	0	0	0	0
<b>Total Net Worth</b>	<b>528,285</b>	<b>530,595</b>	<b>601,690</b>	<b>566,500</b>
<b>Ratio Analysis</b>				
Current ratio	2.72	3.23	4.10	3.43
Current ratio (farm and personal)	2.72	3.23	4.10	3.43
Working capital	20,000	20,000	20,000	20,000
Working capital (farm and personal)	20,000	20,000	20,000	20,000
Current interest to asset	0.1%	0.1%	0.1%	0.1%
Total debt to asset ratio	0.1%	0.1%	0.1%	0.1%
Total debt to equity ratio	0.1%	0.1%	0.1%	0.1%





## Enterprise Analysis

The Goal: Isolating the income and expense from a single enterprise to evaluate financial performance.

- Isolate Income: The easy part
- Isolate Expenses: pick a strategy



## Enterprise Analysis 2

### Strategies to Allocate Costs

*(Often Fixed Costs)*

1. Track Variable Expenses: Categorize expense by "income categories"
2. "percent of resources used" method
3. "percent of total sales" method
4. "number of enterprises" method



## Break Even Quantity

1. How many units to produce to “break-even” on fixed costs.

$$BEQ = \frac{\text{Fixed Costs}}{\text{Price} - \text{Variable Cost Per Unit}}$$



## Break Even Quantity 2

Steps:

1. Collect historical records from previous year (expenses, units produced and sold, capital log)
2. Divide expenses by units produced to get variable expenses per unit.
3. Contribution Margin =  
Selling Price per unit - Variable Expenses per unit
4. Break Even Units =  
Total Fixed Costs / Contribution Margin



## Break-Even Dollars

Fixed Expenses /  $1 - (\text{contribution margin ratio})$

Contribution Margin Ratio =  $1 - \text{Variable Costs}$

VC = 80% of total sales

CM Ratio:  $1 - 80\% = 20\%$

BE Dollars: Fixed Expenses / 0.20

Example:  $\$120,000 / 0.20 = \$600,000$



## Partial Budget

Partial Budget			
<b>Items that add to net income</b>		<b>Items that reduce net income</b>	
<b>Added Returns:</b>		<b>Reduced Returns:</b>	
_____	\$ _____	_____	\$ _____
_____	\$ _____	_____	\$ _____
_____	\$ _____	_____	\$ _____
_____	\$ _____	_____	\$ _____
Total	\$ _____	Total	\$ _____
<b>Reduced Costs:</b>		<b>Added Costs:</b>	
_____	\$ _____	_____	\$ _____
_____	\$ _____	_____	\$ _____
_____	\$ _____	_____	\$ _____
Total	\$ _____	Total	\$ _____
<b>Total added returns &amp; reduced costs (A)</b>		<b>Total reduced returns &amp; added costs (B)</b>	
\$ _____		\$ _____	
<div style="border: 1px solid black; padding: 5px; text-align: center;">           A minus B equals change in net farm income    \$ _____         </div>			



