Business Management Curriculum

Module 3: Introduction to Budgets and Financial Statements

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University of Nevada Cooperative Extension

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THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE & LIFE SCIENCES
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USDA United States Department of Agriculture
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Acknowledgments: Vicki Hebb, reviewing content, and Russ Tronstad (University of Arizona) and Stuart T. Nakamoto (University of Hawaii), content.

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Teaching Notes:
This module is meant to introduce your students to the different financial tools and different budgets used to run a business. Start by giving examples of different types of costs (variable and fixed) and explain how these can affect their business during any decision making process. Be ready to discuss the different financial tools and what each includes.

- The balance sheet identifies the assets and liabilities of the person or business at a certain point in time.
- An income statement examines income and expenses that result in either a net gain or net loss at that time.
- A cash flow statement follows the movement of cash entering and leaving the business, usually measured over the course of one year.

Understanding financial statements can help business owners determine whether or not the business or enterprise is performing as expected.

When discussing the budgets, have the students understand that these are all ways of managing resources to maximize profits.

- The whole farm budget provides a detailed summary of the different enterprises on the farm and how they interact with each and the financial standing of the farm as a whole.
- An enterprise budget is a statement of revenues and expenses incurred in the production of a product. Enterprise budgets are completed using little information regarding the outputs produced given a specified number or combination of inputs, but enterprise budgets give business owners a consistent way of analyzing their production processes.
- A partial budget is used to analyze net change in the whole farm budget given a specific change within an enterprise.

This module is meant to be an introduction, not a comprehensive understanding to the different financial statements and types of budgets. These budgets will be covered in greater detail in later modules.

Educational Objectives:

1. A brief introduction to understanding and developing budgets
2. Understand the difference between a fixed cost and a variable cost
3. A brief introduction to financial tools like balance sheets, income statements, and cash flow statements
4. A brief introduction to different budgets like whole farm, enterprise, and partial

Discussion Topics:

1. What does the balance sheet tell you?
2. Should having a cash flow statement be of high priority for people?
3. Why is having an enterprising budget important?
4. What are the differences between an enterprising budget and a partial budget?
5. Why is having all this information readily available necessary for these objectives?

Available Materials:

1. PowerPoint Presentation (1) - can be printed and used as a handout.
2. Worksheets (6) - can be provided as homework or completed in a workshop if time allows.

a. Food product enterprise budget – This is a breakdown of what a business follows when they are building a budget around their product. This worksheet is broken down into the expected revenue and expenses for an individual product. The expenses are then broken down into different categories like processing and packaging. Breaking down a product's expenses can help a business owner identify areas where they are over-spending. It is important to assign all of your fixed and variable costs to the item being produced. Also, make sure that the allocation of arbitrary costs like overhead are consistent for each product.
b. Farm product enterprise budget – This is similar to the food product enterprise budget. The enterprise budget breaks down the revenue that you receive from selling your product and the expenses that you incur from producing your product. The expenses are broken down into different categories, which will allow the farm manager to see whether there are any areas of over-spending. Again, enterprise budgets are not completely accurate because of a lack of information about future environmental and economic factors.
c. Long-range projected cash flow – This worksheet is useful for determining alternative long-term strategies for your business. This has more steps than other cash flows and looks different, but this approach allows participants to lay out their inflows and outflows in an organized manner to determine what kinds of flows they could experience given particular choices.
d. Budget for food product (REQUIRES EXCEL) – This worksheet contains different categories that cover expenses and income for the production of a food item. Each category tracks the expenses and sales that were made for a specific product as well as the percentage of revenue that used to cover expenses. If your students have some knowledge of excel this is a great worksheet to create an enterprise budget.
e. Budget for small farm (REQUIRES EXCEL) - Just like the budgeting for food product, this worksheet gives categories that make following your expenses and revenue easy. You are able to examine where you are spending less or more money than you want to. From here you are able to determine how much of your budget is being used wisely. By doing a worksheet like this one you can track how well your business is doing or places that could use more help.
f. Cash flow budget (REQUIRES EXCEL) - This worksheet is used to show the students how cash moves through a business from month to month during the financial year. By looking at each category, the students should be able to understand where the money is going and why it is there. The end goal of a cash flow budget is to examine whether you will be making a profit or running a deficit.

3. Other Resources:
   a. RightRisk.org – Provides more outlets for students to learn how to maintain correct business practices.
   b. Budgets: Their use in farm management – This fact sheet from Oklahoma State University Extension covers details about different budgets and how to use these budgets to manage a farm.

c. Quicken – A money management software that is useful in organizing and creating financial statements and budgets. It also plans out your taxes and provides graphs for you to examine the success of your business.

Outline:

1. Reasons to use financial statements and budgets
2. Types of budgets
    a. Whole farm budgets
    b. Enterprise budgets
    c. Partial budgets
3. Define fixed and variable costs
4. Whole farm/Ranch budget
5. Enterprise budget
6. Partial budget
7. Cash flow statement
8. Key financial statements
    a. Balance sheets
    b. Income statements
9. Why use financial statements
10. Balance sheet
11. Income statement
12. A few key ratios
    a. Liquidity
    b. Profitability
    c. Solvency
13. Why keep records?
    a. Questions about record keeping
    b. Categories to organize records
14. Quicken reports and graphs
    a. Cash flow
    b. Tax schedule
    c. Transactions
    d. Account balances
    e. Etc.
15. More information and tools
    a. Rightrisk.org
16. Thank you!

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United States Department of Agriculture

National Institute of Food and Agriculture

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Outline

- Why do we need financial statements and budgets?
- Types of budgets
  - Whole farm
  - Enterprise
  - Partial
- Cash flow statements
- Balance sheets and income statements

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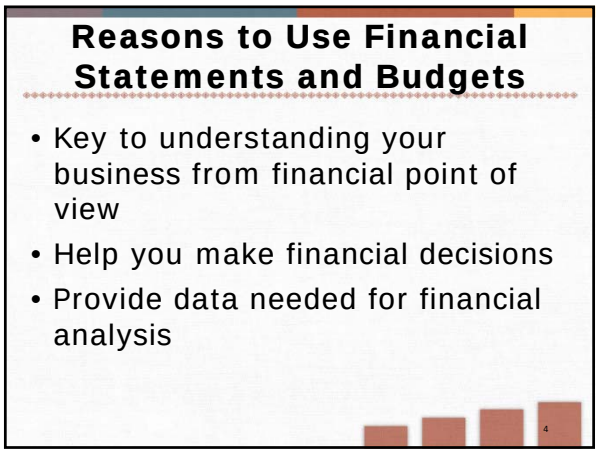
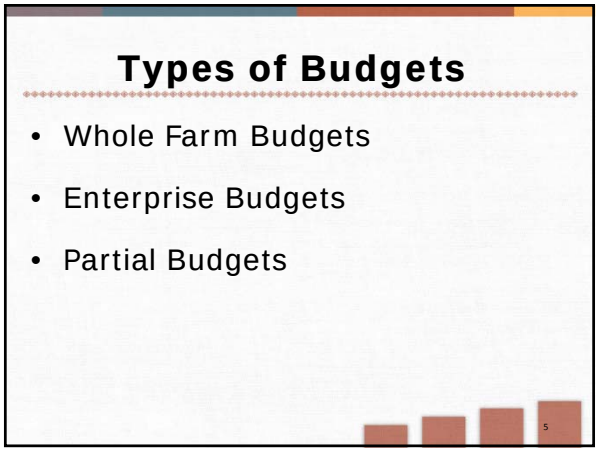
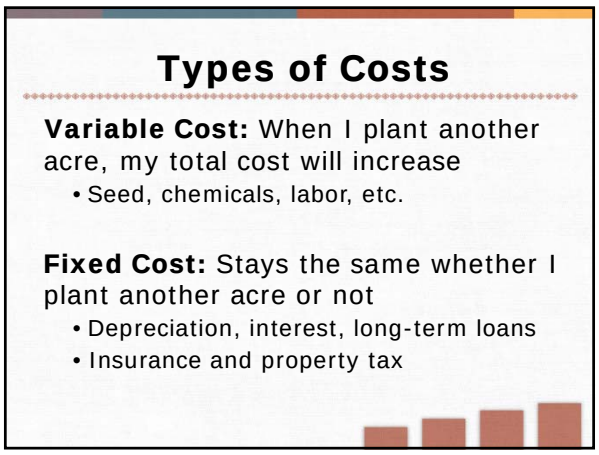


Slide 4: Most people do not like keeping records. They may also be intimidated about how to start keeping records or how to assemble their information. This module will cover some basics. This slide show the motivation to actually do it. Without information about their own operation or idea, it is impossible to analyze it.



Slide 5: These differ based upon the information required and also what they show. Each of them are discussed later.



Slide 6: There are different ways to categorize and assemble costs. The whole farm and enterprise budgets will separate the costs in these two categories. This will also be needed when we perform financial analysis in the next module.

Whole Farm / Ranch Budget

A detailed listing of resources of the entire business and a plan of how resources will be used.

Used appropriately when planning for an entire ranch operation or when a desired change in one part of the operation may affect several other parts of the operation.

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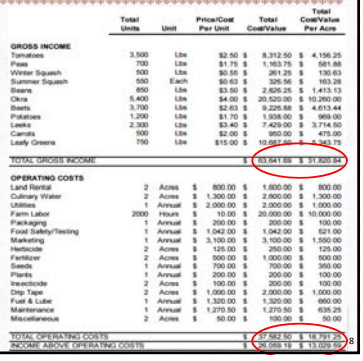
Slide 7: This budget would require the most information. It is similar to an income statement or profit loss statement.

Example of a Whole Farm Budget

Revenue streams from the whole farm are totaled on top

Operating costs are the variable costs for the whole farm



	Total Units	Unit	Price/Cost Per Unit	Total Cost/Value	Total Cost/Value Per Acre
GROSS INCOME					
Tomatoes	3,500	Lbs	$2.50	$ 8,312.50	$ 4,156.25
Peas	700	Lbs	$1.75	$ 1,163.75	$ 581.88
Winter Squash	500	Lbs	$0.55	$ 261.25	$ 130.63
Summer Squash	550	Each	$0.63	$ 326.56	$ 163.28
Beans	850	Lbs	$3.50	$ 2,826.25	$ 1,413.13
Okra	5,400	Lbs	$4.00	$ 20,520.00	$ 10,260.00
Beets	3,700	Lbs	$2.63	$ 9,226.88	$ 4,613.44
Potatoes	1,200	Lbs	$1.70	$ 1,938.00	$ 969.00
Leeks	2,300	Lbs	$3.40	$ 7,429.00	$ 3,714.50
Carrots	500	Lbs	$2.00	$ 950.00	$ 475.00
Leafy Greens	750	Lbs	$15.00	$ 10,687.50	$ 4,343.75
TOTAL GROSS INCOME				$ 63,641.69	$ 31,820.84
OPERATING COSTS					
Land Rental	2	Acres	$ 800.00	$ 1,600.00	$ 800.00
Culinary Water	2	Acres	$ 1,300.00	$ 2,600.00	$ 1,300.00
Utilities	1	Annual	$ 2,000.00	$ 2,000.00	$ 1,000.00
Farm Labor	2000	Hours	$ 10.00	$ 20,000.00	$ 10,000.00
Packaging	1	Annual	$ 200.00	$ 200.00	$ 100.00
Food Safety/Testing	1	Annual	$ 1,042.00	$ 1,042.00	$ 521.00
Marketing	1	Annual	$ 3,100.00	$ 3,100.00	$ 1,550.00
Herbicide	2	Acres	$ 125.00	$ 250.00	$ 125.00
Fertilizer	2	Acres	$ 500.00	$ 1,000.00	$ 500.00
Seeds	1	Annual	$ 700.00	$ 700.00	$ 350.00
Plants	1	Annual	$ 200.00	$ 200.00	$ 100.00
Insecticide	2	Acres	$ 100.00	$ 200.00	$ 100.00
Drip Tape	2	Acres	$ 1,000.00	$ 2,000.00	$ 1,000.00
Fuel & Lube	1	Annual	$ 1,320.00	$ 1,320.00	$ 660.00
Maintenance	1	Annual	$ 1,270.50	$ 1,270.50	$ 635.25
Miscellaneous	2	Acres	$ 50.00	$ 100.00	$ 50.00
TOTAL OPERATING COSTS				$ 37,562.50	$ 18,781.25
INCOME ABOVE OPERATING COSTS				$ 26,079.19	$ 13,039.59

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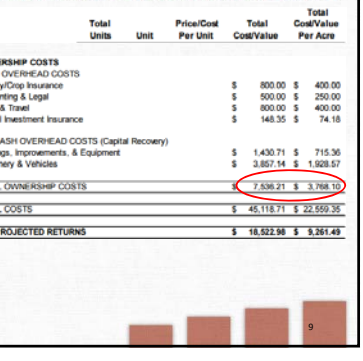
Slide 8: The next two slides show an example of a mixed vegetable farm.

On this slide is the Gross Income which is also referred to as revenue or sales.

The variable costs are also listed along with income above variable costs. Sometimes that could also be returns above variable costs.

Example of a Whole Farm Budget

Ownership costs are the fixed costs for the whole farm



	Total Units	Unit	Price/Cost Per Unit	Total Cost/Value	Total Cost/Value Per Acre
OWNERSHIP COSTS					
CASH OVERHEAD COSTS					
Liability/Crop Insurance				$ 800.00	$ 400.00
Accounting & Legal				$ 500.00	$ 250.00
Office & Travel				$ 800.00	$ 400.00
Annual Investment Insurance				$ 148.35	$ 74.18
NONCASH OVERHEAD COSTS (Capital Recovery)					
Buildings, Improvements, & Equipment				$ 1,430.71	$ 715.36
Machinery & Vehicles				$ 3,857.14	$ 1,928.57
TOTAL OWNERSHIP COSTS				$ 7,536.21	$ 3,768.10
TOTAL COSTS				$ 45,118.71	$ 22,559.35
NET PROJECTED RETURNS				$ 18,522.98	$ 9,261.49

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Slide 9: The ownership or fixed csosts are included here. The cash overhead costs are ones that acutal dollars are spent during the year.

The non-cash overhead costs are how to include some costs each year for long-term assests such as equipment and land that may have been purchased in a different year. Even if they were purchased this year only a portion should be included.

Enterprise Budget

The physical and financial planning for a specific livestock enterprise (e.g., sheep, cattle, etc.).

Estimates the expenses and receipts for a set period of time under a set of production practices.

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Slide 10: An enterprise budget is similar to a whole farm budget but it is only for a single enterprise.

There are various ways to define an enterprise. It could be a specific type of livestoct or a crop such as cattle or sheep. It could also be a combination of crops. For example, a vegetable farm selling directly to customers.

It would include all of the receipts (sales or revenue) and expenses for a period of time usually a year.

Basic Parts of an Enterprise Budget

- A section of yield, price, and income
- A section containing variable costs
- A section of fixed/overhead costs
- An estimate of profit or net income per cow or some other variable.

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Example of an Enterprise Budget

Enterprise Budget for 14' x 100' Tomato Bed

Revenue	Quantity	Unit	Price	Total	% of Revenue
Product	number sold	size of unit	price per unit	Total revenue	
Individual product					
Tomatoes Average Price	450	lbs	$ 1.50	$ 675.00	100%
Total Revenue				**$ 675.00**	100%
Expenses					
Materials				$ 129.00	
Labor				$ 530.00	
Marketing				$ 20.00	
Ownership Expenses (Fixed Costs)				$ 125.00	
Total Expenses				**$ 804.00**	119%
Net income before taxes (revenue minus expenses)				**$ (129.00)**	-19%
Income and self employment taxes				$ (19.35)	-3%
Net profit				**$ (109.65)**	-16%

Revenue from an individual product is totaled on top.

Expenses for the individual product are broken down into different sections.

Variable expenses were broken down by
- Materials Needed
- Labor
- Marketing

This is not the only way to lay out the variable expenses, as long as all expenses are included for the individual product.

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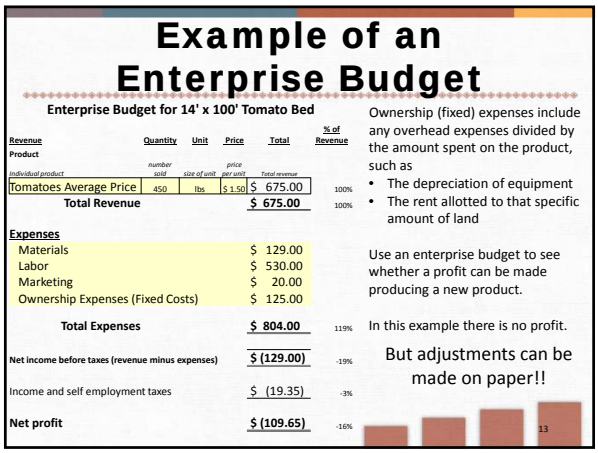
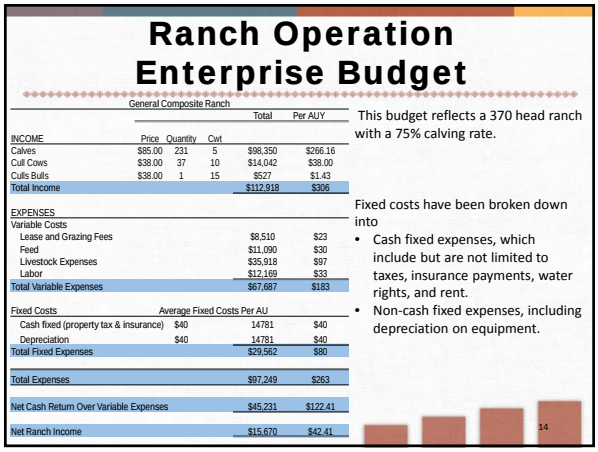
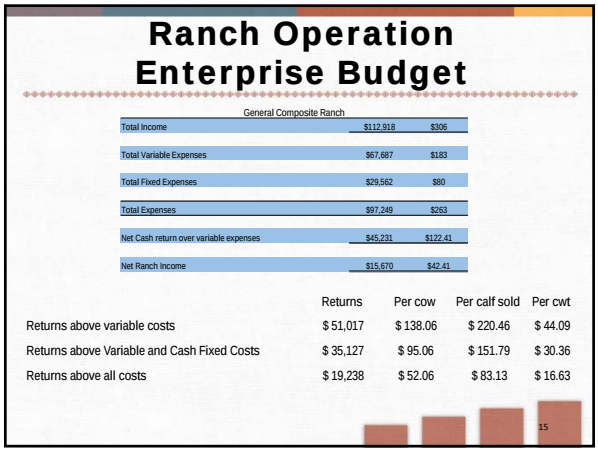


Slide 13: It would be good to have a discussion of why you would bother with an enterprise budget. One main reason is that it is much more fun to lose money on paper than in real life. This gives them an opportunity to look at various combinations. Module 4 will use these enterprise budget examples and show how to do various types of financial analysis.

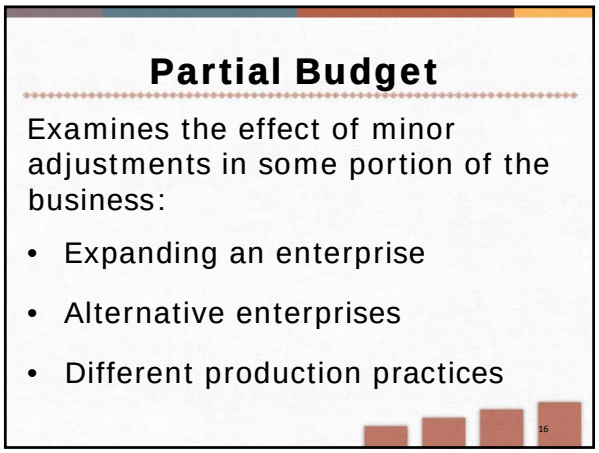


Slide 14: Another good discussion is to ask participants what they can tell about an enterprise by looking at the budget. For example, they can tell if it is making money (has profit). They can see where money comes from and where it is being spent.

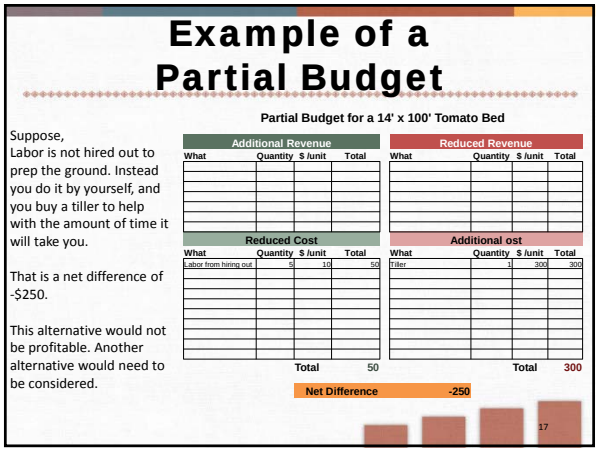
On this budget a final column is added to look at all the amounts per cow or animal unit year. This could also be done per acre or some other unit.



Slide 15: This shows various ways that the amounts could be displayed per unit.



Slide 16: A partial budget is useful to look at a change in something. Information is only needed for revenue and expenses that change.

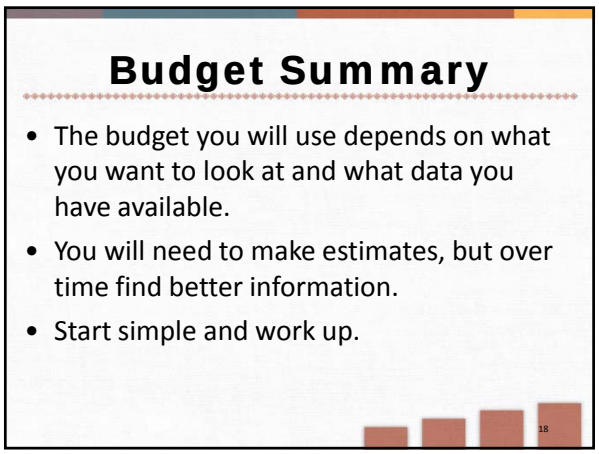


Slide 17: The green side is the positive effects of the change and the red side is the negative. A parital budget looks at whether the positives outweigh the negatives.

This example uses the tomato enterprise budget to look at buying a tiller to prep the ground instead of hiring labor.

If the tiller was going to last several years there are a couple of options. One is to just take the purchase price divied by the years. For example, $300/10 is $30 per year.

The other method is to find the loan payment in MyFi Assist and include that.



Cash Flow Statement

- The cash flow traces the flow of cash into and out of the business over a period of time, usually one year
- Deals only with cash transfers and breaks the year down by month.
- Allows the planner to anticipate credit needs and repayment schedules

Cash Flow Statements

Cash Flow: Running cash balance of the cash inflow and outflow for a period. This is usually prepared annually, showing income, outflow, and cash available or needed for each month.

Projected Cash Flow: Same as above, but completed at the start of the year to estimate the cash flow needs of the operation.

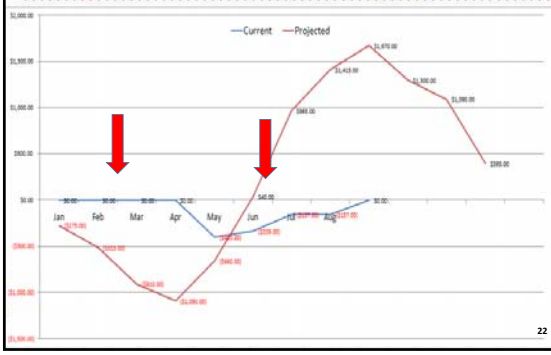
Projected Cash Flow

Monthly Income and Expenses

year: 2009

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL	Projected
Tomatoes				$500.00	$600.00	$700.00	$700.00	$600.00	$500.00				$3,600.00	
Asparagus					$300.00	$500.00	$500.00	$400.00	$300.00				$1,900.00	
Corn					$375.00	$300.00	$300.00						$975.00	
Other													$0.00	
Gross sales	$0.00	$0.00	$0.00	$500.00	$1,175.00	$1,500.00	$1,500.00	$1,000.00	$700.00	$0.00	$0.00	$0.00	$6,375.00	$0.00
Car & Truck (line 12)	$75	$65	$80	$80	$70	$65	$75	$70	$85	$65	$70	$75	$855.00	
Chemicals (line 13)													$0.00	
Conservation expenses (line 14)				$75	$80	$80							$235.00	
Custom Hire, machine work (line 15)			$120			$120			$120			$120	$480.00	
Depreciation (line 16)													$0.00	
Employee Benefit plan (line 17)													$0.00	

Why Cash Flow Analysis is Important



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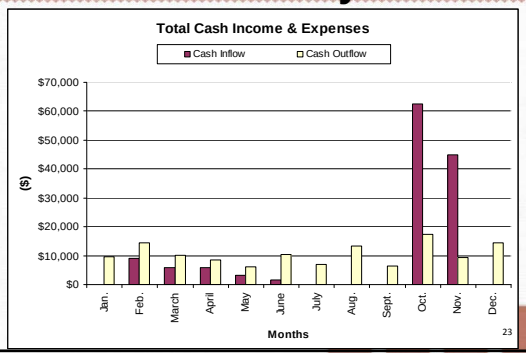
Monthly Cash Flow Summary



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Key Financial Statements

Balance Sheets

Income Statements

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Why have Financial Statements

- Am I really making money?
- Is my business growing?
- Is my wealth increasing?
- Do I have resources I can use to grow?

Balance Sheet

- Assets - What I own (sheep, cattle, equipment, etc.)
  - Even if there is a lien against it
  - Don't count leased assets
- Liabilities - What I owe to others
  - Include the amounts of any assets financed
- Wealth - How much equity I have
- Also called net worth statement

A SAMPLE BALANCE SHEET

	Assets			Liabilities	
Balance Sheet	**Beginning**	**Ending**		**Beginning**	**Ending**
Cash on Hand	**30,000**	32,171	Accounts Payable (Exp)	**0**	0
Crops Held for Feed (Exp)	**0**	0	Accrued Interest (Exp)	17,551	12,024
Crops Held for Sale (Inc)	**250,000**	250,000	Current Principal	75,399	80,926
Market Livestock (Inc)	**0**	0	Other Current Liability (Exp)	**10,000**	**10,000**
Other Current Assets (Inc)	**45,000**	45,000	Short Term Notes (Exp)	**0**	0
Invest Growing Crops (Exp)	**0**	0	Def. Tax on Current Assets	0	0
Supp.& Prepaid Exp. (Exp)	**20,000**	20,000	Operating Loan Carryover	**0**	0
Total Current Assets	345,000	347,171	**Total Current Liab.**	102,951	102,951
Non-Current Assets			**Non-Current Liabilities**		
Mach. & Equipment	550,000	505,000	Prin. on T.D. & C.L.	216,223	135,296
Breeding Livestock	181,500	179,500	Def. Tax on Long Term Assets	0	0
Real Estate-Land, Bldgs, Impr	1,075,000	1,060,000	Total Business Liab.	319,173	238,247
Total Business Assets	2,151,500	2,091,671	**Business Net Worth**	1,832,327	1,853,425
			Change in Equity From Beginning to End of Year (Retained Earnings)		**21,098**

AN INCOME STATEMENT

An accounting of income and expenses for a period of time for the purpose of calculating net income or net loss for the period

Also called Profit & Loss Statement

Parts of an Income Statement

- Operating receipts
- Operating expenses
- Adjustments for changes in inventories
  - +/- Livestock
  - +/- Crops
- Adjustments for changes in capital items
  - Gain or loss from sale of capital items
  - Less depreciation

A SAMPLE INCOME STATEMENT

Income Statement - Accrual Adj.	Income
Cash Income (Net of cull lvstk sales)	$96,227
Non-Cash Income Adjustments	0
Non-Cash Income (Raised Brdg Lvstk)	22,500
Capital Gain/Loss on Breeding Lvstk (Net)	(3,960)
Gross Revenue	$114,767
	Expense
Cash Expense (Excluding Interest)	68,113
Non-Cash Feed Inventory Adjustment	0
Other Non-Cash Non-Interest Expense	0
Depreciation (Land, Bldgs, Equip.)	68,000
Total Operating Expense	136,113
Cash Int. Exp. - T.D. & C.L.	17,551
Cash Int. Exp. - Operating	1,916
Non-Cash Interest Expense	(5,527)
Total Expense	$150,053
Net Business Income From Operations	(35,286)
Net Business Income	(35,286)
Income+SS+Def. Tax--Cash & Non-Cash	0
Net Income	**($35,286)**

A Few Key Ratios

MEASURES OF LIQUIDITY

MEASURES OF PROFITABILITY

MEASURES OF SOLVENCY

Cost Basis

Debt/Asset Ratio =	Beginning		Ending	
Total Farm Liabilities	87,923		75,927	
divided by Total Farm Assets	139,544		136,466	
		0.63		0.56

Cost Basis

Equity/Asset Ratio =	Beginning		Ending	
Total Farm Equity	51,621		60,539	
divided by Total Farm Assets	139,544		136,466	
		0.37		0.44

	Beginning		Ending	
Total Farm Equity	51,621		60,539	
divided by Average Farm Net Worth		56,080		
		0.24		

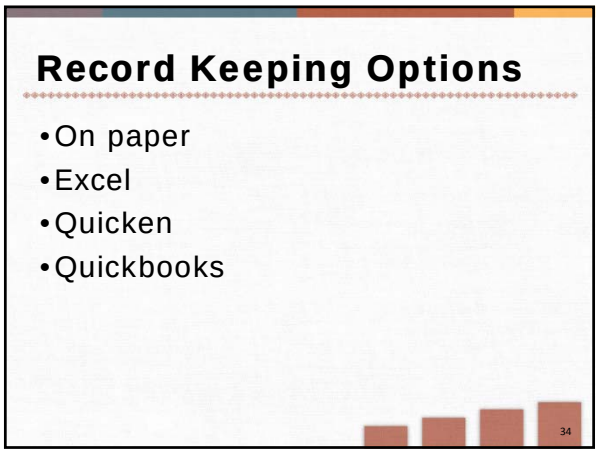
Know Where Your Business Stands

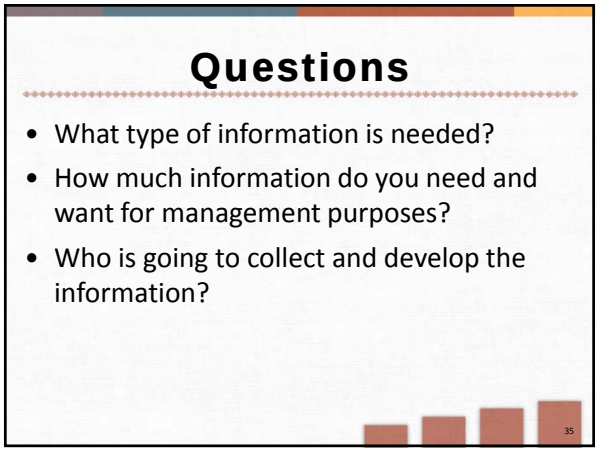
Benchmark Measures	GREEN	YELLOW	RED
Percent Equity	> 65%	35 – 65%	< 35%
Working Capital/Revenue	>33%	15 – 33%	<15%
Coverage Ratio	>200%	110 – 200%	<110%
Return on Assets	>10%	4 – 10%	<4%
Operating Expenses/Revenue (Excluding Interest & Depreciation)	<70%	70 – 80%	>80%
Know Cost of Production	By Enterprise	Overall Operation	None
Credit Score	>700	650 – 700	<650
Family Living	Low	Modest	High
Risk Management	All Areas	Some	None
Business Plan	Written	Verbalized	None

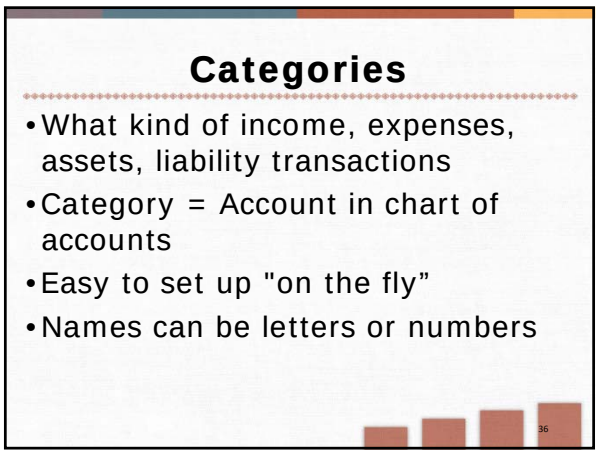
Source: Dr. David M. Kohl "Agriculture: What's Around the Corner & Down the Road, St. Lois, MO 2011

Why Keep Records?

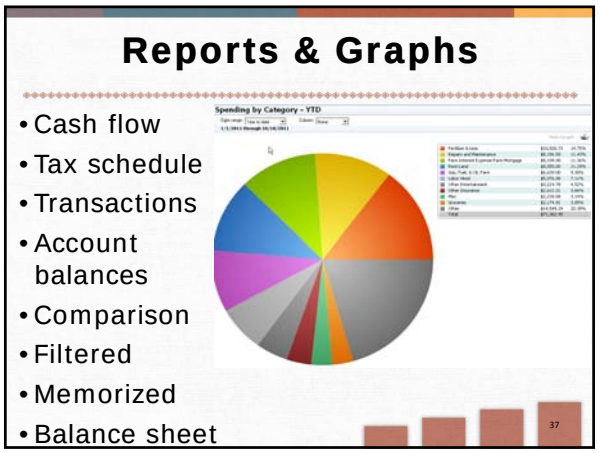
- Help you make decisions
- You know where your business is
- Pay income taxes
- Apply for loans







Slide 36: Users will want to spend some time thinking about the kinds of income and expenses that they need to track. In the beginning, you may want to start with categories for tax reports or match an existing chart of accounts or record system. Quicken includes default categories for typical family income and expenses as well as an option to add investment accounts, small business accounts (Schedule C), rental and royalties, etc., but nothing for farm. You can download a list that matches Schedule F from the OSU website, agecon.okstate.edu/quicken under Download Sample Files, Farm Category QIF. Start simple and add new levels of detail as needed for management purposes. The category list is shared (accessible) across all accounts within your Quicken file. Income items are listed first and are alphabetical, followed by Expense items. Indented words (e.g. Grain under Raised Sales) are sub-categories.



Slide 37: This list of the kinds of default reports demonstrates the variety of things that can be generated with a couple of clicks of the mouse. Once you have a record keeping system in place, there are many reports and ways of looking at your situation. In addition to the tables of numbers that you can generate, I also like the income and expense bar charts and this pie chart showing the top 10 expense categories for our sample file (the remainder are lumped together in the other, but in Quicken you can click on the piece of the pie with your mouse and view the next 10).

Slide 38: For more in-depth information and tools related to not only the three topics listed above, but also on many other Farm and Ranch management related topics, go to RightRisk.org. Risk management education products developed by the RightRisk Education Team are innovative risk research and education efforts designed to help farmers and ranchers understand and explore risk management decisions and evaluate the effects of those decisions.

Revenue	Unit	Price	Quantity	TOTAL	% of Revenue
Product: Individual product	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total revenue **(a x b) = (c)**	**(c / d) x 100**
TOTAL REVENUE (d)					

Expenses	Unit	Price	Quantity	TOTAL	% of Expenses
Ingredients/Materials: Individual product	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL MATERIAL/INGREDIENT COST (d)					

Processing	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL PROCESSING COST (d)					

Packaging	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL PACKAGING COST (d)					

Labeling	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL LABELING COST (d)					

Storage	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL STORAGE COST (d)					

Labor	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL LABOR COST (d)					

Promotion	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL PROMOTION COST (d)					

Promotion	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL PROMOTION COST (d)					

TOTAL REVENUE
The sum of **TOTAL REVENUE (d)** _____

TOTAL EXPENSE
The sum of each table's **TOTAL COST (d)** **-** _____

NET INCOME BEFORE TAXES
(Total Revenue – Total Expenses) **=** _____

Income and Self-Employment Taxes **-** _____

NET PROFIT **=** _____

Revenue	Unit	Price	Quantity	TOTAL	% of Revenue
Product: Individual product	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total revenue **(a x b) = (c)**	**(c / d) x 100**
TOTAL REVENUE (d)					

Expenses	Unit	Price	Quantity	TOTAL	% of Expenses
Ingredients/Materials: Land Preparation	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL MATERIAL/INGREDIENT COST (d)					

Planting	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL PLANTING COST (d)					

Maintenance	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL MAINTENANCE COST (d)					

Harvesting	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL HARVESTING COST (d)					

Storage	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL STORAGE COST (d)					

Labor	Unit	Price	Quantity	TOTAL	% of Expenses
Materials/Services:	Size of package	Price per unit **(a)**	Number Sold **(b)**	Total Expense **(a x b) = (c)**	**(c / d) x 100**
TOTAL LABOR COST (d)					

TOTAL REVENUE
The sum of **TOTAL REVENUE (d)** _____

TOTAL EXPENSE
The sum of each table's **TOTAL COST (d)** **-** _____

NET INCOME BEFORE TAXES
(Total Revenue – Total Expenses) **=** _____

Income and Self-Employment Taxes **-** _____

NET PROFIT **=** _____

Use the space below to calculate and compare your business's present cash flow and its cash flow under the alternative strategies that you are considering. Begin by estimating total cash inflows and outflows. Then subtract outflows from inflows. If the projected net cash flow is positive, then the plan will cash flow (it will be able to make debt payments on time). If the net cash flow is negative, the business alternative will have trouble servicing short-term debt.

Projected Cash Flow:	Base Plan	Strategy #1	Strategy #2
Net income			
Depreciation expense			
Interest expenses on term debt			
Other income			
Total cash inflows (a)			
Owner withdrawals			
Income and social security taxes			
Principal and interest payments on term debt			
Loan:_____			
Loan:_____			
Loan:_____			
Loan:_____			
Loan:_____			
Total cash outflows (b)			
Projected net cash flow (a – b)			

Budgets: Their Use in Farm Management

Damona Doye
Regents Professor and Extension Economist

Questions of how to best organize and manage the farm business in a manner consistent with the goals and objectives of the farm family must be continually addressed. The decision as to whether the considered alternatives are consistent with established goals and objectives rests upon the farmer and the farm family acting as the manager if no outside management is hired. The technique and process for developing and analyzing alternatives for decision making is well established and is called budgeting. Budgeting is a management tool that can provide information to answer a multitude of questions if used properly. Combining inputs into products, allocating resources to alternative products, and choosing combinations of different products are choices whose consequences can be analyzed efficiently through the use of the budgeting tool.

The purpose of this OSU Extension Fact Sheet is to describe the different types of budgets that are available to farm managers. The basic economic principles involved will be introduced and related to the types of budgets.

Introduction

The agricultural producer or farm manager is challenged when organizing and managing farm resources to maximize economic returns to owned or controlled resources. Resources include land (owned and rented) and associated improvements, capital assets such as machinery and breeding livestock (borrowed and owned), and labor (hired, farm operator, and additional family). The manager is responsible for combining available resources and knowledge to best achieve the desired goals and objectives of the farm business.

With budgets, management can begin to answer such questions as:

- How may the available resources best be used?
- What enterprises (crops and/or livestock) can be produced and which will contribute most to returns to owned resources?
- How much of the controlled land should be devoted to each enterprise?
- What equipment and machinery will be needed to produce the potential enterprises?
- What production practices should be used to produce each of the enterprises?
- How much labor (both family and hired) will be needed on the farm?
- What are the capital requirements?

Farm management skills and knowledge are an integral part of financial success.

Oklahoma Cooperative Extension Fact Sheets are also available on our website at:
http://osufacts.okstate.edu

Resource Allocation

The problems of resource use and allocation involve the application of five economic principles. These principles, in a simplified form, consist of:

- Adding units of an input as long as the value of the resulting output or added returns is greater than the added cost.
- Substituting one input for another as long as the cost of the added input is less than the cost of the input that is replaced and the output is maintained.
- Substituting one product for another as long as the value of the added output is greater than the value of the output that is replaced and the cost is constant.
- Using each unit of resource where it gives the greatest returns when resources are limited.
- Basing comparisons upon discounted values when considering different time periods and/or elements of risk.

The first three principles relate to situations where unlimited resources are available for use by the manager with perfect knowledge. The last two relate to situations where there are limited resources and when there is not perfect knowledge.

Most resource allocation management problems faced by farm managers can be addressed by applying the basic budgeting economic principles. Numerical calculations to assist in making management decisions. No one type of budget is tied to any particular principle. The type of budget relates to the intent of the analysis, while the principles relate to the farm resources and the resource relationships that exist.

Types of Budgets

There are three basic types of budgets that can be used in the farm business management process. Each type of budget provides different information to the manager for use in the decision-making process. The common thread in each type is that, if properly defined and used, the budget format permits the manager to use economic logic to answer questions of what, how much, and when resources should be used to achieve the goals and objectives as established by the farm family.

The three types of budgets are:

1) Whole-farm budget
2) Enterprise budget
3) Partial budget

The whole-farm budget is a classified and detailed summary of the major physical and financial features of the entire farm business. Whole-farm budgets identify the component parts of the total farm business and determine the relationships among the different parts, both individually and as a whole.

An enterprise budget is a statement of what generally is expected from a set of particular production practices when producing a specified amount of product. It consists of a statement of revenues from and the expenses incurred in the production of a particular product. An enterprise budget documents variable and fixed costs. It is useful in calculating profitability and break-even values.

The partial budget is useful in analyzing the effects of a change from an existing plan. This budget only considers revenue and expense items that will change with a defined change in the plan.

Whole-Farm Budgeting Process

To develop a whole-farm budget:

1) List the goals and objectives of the farm firm.
2) Inventory the resources available for use in production.
3) Determine physical production data that will be used in the input/output process.
4) Identify reliable input and output prices.
5) Calculate the expected variable and fixed costs and all returns.

Since it is a plan for the future use of farm resources and establishes the future direction of the farm organization, the whole-farm budget must conform to the farm family goals and objectives to be successful. Farm management that is goal-directed integrates the goals and objectives of the farm with those of the family and reduces pressure on competitive uses of family controlled resources. OSU Extension fact sheet AGEC-244, "Goal Setting for Farm and Ranch Families," can help develop a process for identifying farm and family goals, prioritizing them, and identifying management strategies that will achieve the identified goals (a worksheet is included). The **whole-farm budget** is the best tool to analyze the farm business and the impacts of the goals and objectives.

The whole-farm budget should start with the inputs the operator has available for use in the farm business. Often the amount of land and operating capital available are limiting factors. Other factors such as buildings, the farmer's managerial skills, and available markets can also be relatively fixed. It is important to start with those fixed elements in planning a whole-farm budget. The results of the whole-farm budget should combine the resources, constraints, technical information, and price data into a realistic whole-farm budget for the farm being considered. The outcome should be a plan that can provide direction for the farmer and family to follow in maximizing the returns to owned resources.

An Enterprise Budget

Although managers lack information needed to make perfect decisions, they are forced to make decisions using information available and then must accept the risk associated with that decision. An enterprise budget provides a format for the manager to use in classifying information so that the economics of alternative enterprises and alternative production systems can be consistently analyzed.

One problem in enterprise budgeting is the lack of information concerning the amount of products that will result from particular combinations of inputs for example, how much forage would be produced with a certain amount of seed and fertilizer. Seldom do managers have certainty regarding technical production information as producers never have complete information with regard to production conditions, such as weather and insects. Typically, more information is available regarding the prices of inputs than on products since inputs are purchased during one time period and products are sold in a later time period. The greater lag between planning and actual use of information on product prices relative to input prices adds uncertainty and product price risk that must be considered when planning.

An enterprise budget should contain several components. A detailed description should include a production goal, the production techniques to be employed, the land resource required, and even something about the capital and labor requirements. An enterprise budget should include all costs and all returns associated with the defined enterprise. All variable and fixed costs, both cash and non-cash items, should be included. The returns from products produced for sale (wheat grain crop) plus those that are produced for use in another enterprise (grazing) should be included in an enterprise budget.

Variable costs are the costs of such input items as seed, feed, fertilizer, normal repairs, custom operations, and machinery and equipment operating expenses. These costs also include labor whether associated with machinery or equipment or as hand labor operations. They are items that will be used during one year's operation or during one production period and would not be purchased if the enterprise was not produced. **Variable costs are always included in an enterprise budget.**

Fixed costs are the costs associated with buildings, machinery, and equipment which are prorated over a period of years. Included in this category are depreciation, interest, insurance, and taxes on individual buildings and pieces of machinery and equipment that can be allocated to an individual enterprise. **Fixed costs are always included in an enterprise budget.**

Some costs of production are difficult to allocate to a specific enterprise. The costs are generally classified as overhead costs and include costs usually associated with buildings, utilities, and other miscellaneous items (such as record keeping and budgeting) that are used in more than one enterprise and are not easily allocated to an individual enterprise. Overhead costs can include both variable and fixed costs. It is necessary to allocate all costs of producing an enterprise even if an arbitrary method of allocation must be used. The key to allocating costs is to develop a process that is consistent over time.

The OSU Agricultural Economics Department has developed software tools to assist producers in analyzing many Oklahoma crop and livestock enterprises. Information and sample reports are available at agecon.okstate.edu/budgets.

The Partial Budget Concept

Partial budgeting is a procedure where receipts and expenses which increase/decrease with a change in organization or procedures are listed in a systematic order. It is a process to allow a total farm budget to be fine-tuned. It focuses the analysis of a defined change to see if it improves the total farm budget.

The steps in constructing a partial budget are to:

1) State the proposed alternative or change that will be analyzed.
2) Collect data on all aspects of the business that will be affected by the change.
3) Classify or group the types of impacts that will occur by including expenses increased or reduced and receipts increased or reduced.

The partial budget (example in Table 1) is based on the concept that a change in the organization of the business will have one or more of the following effects:

Positive Economic Effects

- The change will eliminate or reduce some costs.
- The change will increase returns.

Negative Economic Effects

- The change will cause some additional costs.
- The change will eliminate or reduce some returns.

The net change between positive and negative economic effects is an estimate of the net effect of making the proposed change in the total farm budget. A positive net change indicates a potential increase in income and a negative net change indicates a potential reduction in income due to the proposed change.

Sources of Budget Information

All budgets should be based upon the best information available. The reliability of the budgets is only as good as the quality of the data used in the process. Data needed for use in budgets includes quantity, price, method, and timing of the inputs used.

Some sources of information available for use in preparing budgets are:

1) Actual farm records
2) Area summary analysis
3) County production data
4) Typical budgets
5) Farm literature
6) Information from meetings
7) Neighbors

Any or all of these sources should be used in collecting and verifying data or information used in preparing budgets. Good managers verify the reliability of data collected from any source to see that it applies to their situation. Experience from one year is only an indicator and does not assure that same response will result in following years.

Budget Limitations

Careful evaluation of the resource situation must precede the drawing of inferences from budgets. Farms with different owned resource situations can have different management plans given the same basic budget information. Budget data for a 160 acre farm can be used in preparing a budget for a farm of 320 acres; however, differences in resources and organization must be considered and adequately accounted for if the end result is to be reliable and useful.

Budgets are generally constructed to reflect future actions and it is difficult to accurately predict future prices and yields. Historical data provide some basis for establishing initial levels of budget yield, price, and timing data. Several options are available in establishing future prices such as forward contracting and hedging techniques.

Production and marketing risks will limit budget reliability. "Best estimates" should be used to develop budgets for use in farm business analysis. However, high degrees of variability create risk to the operator and put pressure on the reliability of

Table 1. Partial Budget, Wheat Grazeout versus Harvest for Grain.

Situation: Should I leave stockers on wheat pasture for 60 days rather than remove stockers and combine wheat?

Additional Costs [1]		Additional Returns	
Interest on investment	$ 8.00	Steers: 790 lbs. x $1.58/lb.	$ 1,248.20
Additional vet., feed, etc.	3.00		
Reduced Returns		Reduced Costs	
Steers: 640 lbs. x $1.74/lb.	$ 1,113.60	Harvesting	
		$23/a + ($0.23/bu. x 14)	$ 26.22
Wheat sales:		Hauling:	
35 bu. x $4.00/bu.	140.00	$0.24 x 35 bu./acre	8.40
Total annual additional costs and reduced returns	$ 1,264.60 (A)	Total annual additional returns and reduced costs	$ 1,282.82 (B)
			- 1,264.60 (A)
		Net change in income (B - A)	$ 18.22

[1] Estimates are based on representative budgets from northwest Oklahoma.

the estimates used in the enterprise budgets. One alternative is to evaluate best and worst case scenarios in addition to the expected outcome. Probability distributions on weather events and prices can add valuable insights. Even under careful use, errors can compound themselves to the point where budgets can have little or no value. This element of risk should be considered and evaluated by the manager when determining the solutions that best meet the goals and objectives of the farm family.

Budget preparation is time consuming. It requires pencil and calculator activity as well as searching data sources for information to be used in preparing the budget. Software is also available to assist in budget calculations. As with all problems, this becomes an economic question such that the farmer faces the problem of allocating his/her time in a manner whereby the returns from budgeting are greater than the cost of gathering the information.

Why Budget?

Using budgets can provide the farm manager a method to:

1) Experiment through simulation with possible outcomes of a given organizational change before resources are actually committed to the change.
2) Uncover cost items that might otherwise be overlooked.
3) Refine the present organization.
4) Seek credit from lending agencies.
5) Learn to better organize and reorganize.

Aids to the Process

The Department of Agricultural Economics has decision aids and materials available to assist farmers in building an information system, using information to develop all types of budgets, and using budgets in management decisions. Meetings are held upon request throughout Oklahoma to provide the most current information available. Computer software has been developed to assist with the analysis and assimilation of data into the management framework.

Enterprise budgets developed by the Department of Agricultural Economics are available at www.agecon. okstate.edu/budgets. Those interested in obtaining enterprise budgets may also contact their Extension Educators — Agriculture, Area Agricultural Economics Specialist, or State Agricultural Economics Specialist, Room 515, Agricultural Hall, OSU, Stillwater, OK 74078, (405) 744-9836 for more information.

Record keeping systems (both manual and electronic) as explained in OSU Extension Fact Sheet AGEC-302, "Information Systems for Oklahoma Farmers," are available to help organize historical data for use in business management. One such affordable software program that is appropriate for farms and ranches requiring only cash records is Quicken. More information on using Quicken for farm financial record-keeping is available from the OSU Department of Agricultural Economics at http:// www.agecon.okstate.edu/quicken/. For smaller or less complex businesses, hand-kept ledgers may still be a satisfactory alternative. The Oklahoma Farm and Ranch Account Book is designed to be a comprehensive, easy to use, manual record-keeping system. A customized book can be built and printed for individual needs at agecon. okstate.edu/farmbook. Other types of ledgers are often available from agricultural lenders, farm supply dealers, and farm management firms.

Summary

Budgets (whole-farm, enterprise, and partial) are management tools to help evaluate the farm business. Each type of budget has a different but related purpose and should be used by managers accordingly. The whole-farm budget becomes a starting point that can be used to analyze the farm business over time. Enterprise budgets can be used to analyze components of the farm business and also be a building block for the whole-farm. Once a whole-farm budget has been developed, a partial budget can be valuable in evaluating changes to the total-farm budget. Each type of budget offers useful information to support management decisions.

Other Fact Sheets that are available through your local Extension office:

AGEC-213 Farm Family Decision-making
AGEC-302 Information Systems for Oklahoma Farmers
AGEC-751 Developing a Cash Flow Plan
AGEC-752 Developing a Balance Sheet
AGEC-753 Developing an Income Statement

Adapted from an earlier version by Raleigh Jobes former Associate Professor of Agricultural Economics.

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