Using Farm Financial Records

MODULE 2

Beginning Farmer Curricula Series

Activity 1.

Creating a Balance Sheet for a Sample Farm

Part 1. Introduction to the Balance Sheet

Part 2. Methods for Valuing Assets

Part 3. Example Balance Sheets

Part 1. Introduction to the Balance Sheet

- Assets and liabilities, and the concept of “net worth”
- Definition and purpose of the balance sheet
- Types of assets and liabilities (current, intermediate, long-term)
- Format and layout of the balance sheet
- Building a balance sheet

Assets

Asset: physical or financial property that has <u>value</u> and is <u>owned</u> by the business

Examples:

- Land / buildings
- Livestock
- Equipment

For a balance sheet, *we also need to track these assets*:

- Accounts receivable
- Pre-paid expenses
- Inventories

Liabilities

Liability: Financial obligation (debt) that must be paid in the future.

Examples:

- Loans
- Accounts payable – unpaid expenses you have the bill for
- Accrued expenses – those which have been incurred or agreed to but you *don't yet* have the bill

Net Worth

Net worth of the business is the total value of all the goods and assets minus everything that is owed by the business. In other words, if all the assets were to be sold and the debts paid, net worth/ owner equity is what is left over.

Net worth is another term for the owner equity.

Assets – Liabilities = Net Worth.

Balance Sheet, Defined

Balance Sheet: A financial report summarizing the assets, liabilities, and net worth/owner's equity of a business at a specific ***point in time***

- Point in time can be business's year end, such as 12/31/2024
- Sometimes called the Net Worth statement

Purpose of Balance Sheet

A balance sheet illustrates:

- What is “owed” and what is “owned”
- The financial position of the business
  - Ability to handle risk
  - Ability to pay off debts (“solvency”)

Purpose of Balance Sheet

- We can use the balance sheet to monitor financial progress over time (years).
- We can track changes in owner’s equity over time.

Purpose of Balance Sheet

What a balance sheet **does not do**:

- It does NOT necessarily tell you if the business is making money.
- It does NOT tell you where net worth/ owner’s equity came from.

Purpose of Balance Sheet

A balance sheet is important/ can be used for :

- Analysis of financial trends and ratios
- Benchmarking
- Communicating within the business
- Communicating outside the business: lenders, partners

Current Assets and Liabilities

- **Current assets** are assets that can be converted into cash within 12 months. These include:
    - Crops
    - Market livestock
    - Prepaid expenses
    - Accounts receivable
    - Cash/ checking / savings account balances of course.

Current Assets and Liabilities

- **Non-current assets** are those that are more difficult to sell, or their sale would disrupt business as usual. These include:
    - Buildings
    - Land
    - Breeding livestock
    - Machinery
    - Equipment

Current Assets and Liabilities

- **Current liabilities** are financial obligations that will become due and payable within one year. These include:
    - Unpaid bills
    - Property taxes
    - Operating loans
    - Accounts payable

Current Assets and Liabilities

- **Non-current liabilities** are financial obligations that will become due and payable some time after one year. These include:
    - Continuing longer term debt payments that will be made the next year and after
    - Agreements that obligate you to spend money in the future (contracts with a future start date)

Intermediate and Long-Term Assets and Liabilities

- **Intermediate assets**: have a useful life of 1 to 10 years, including:
  - Most machinery
  - Equipment
  - Breeding livestock

- **Long-term assets** have a normal useful life of more than 10 years:
  - Land
  - Buildings

Intermediate and Long-Term Assets and Liabilities

- **Intermediate liabilities** are scheduled to be paid within 1 to 10 years.
    - Loans for machinery
    - Equipment loans
    - Breeding livestock loans

- **Long-term liabilities** are scheduled for 11 or more years:
    - Loans or land contracts for land
    - Buildings, house payment

Format and Layout of the Balance Sheet

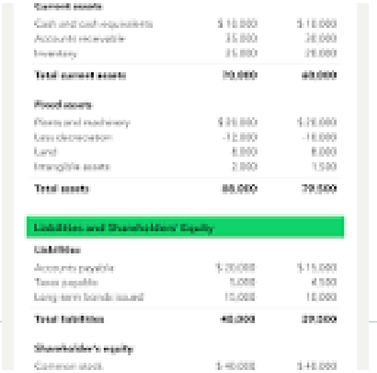

SAMPLE
BALANCE SHEET

ASSETS

LIABILITIES & EQUITY

- “Stacked” balance sheets have the assets on top, then the liabilities, followed by net worth calculations as you scroll down

- “Two-sided” balance sheets have the assets on the left, liabilities on the top right, and net worth/owner’s equity on the bottom right



Format and Layout of the Balance Sheet

Balance sheets can also differ by the number of asset/liability categories that are detailed:

- Two category balance sheet = Current & noncurrent
- Three category balance sheet = current, intermediate, & long-term

TWO CATEGORY BALANCE SHEET FORMAT (Two-sided)

Assets	**Liabilities**
Current Assets	Current Liabilities
Noncurrent Assets	Noncurrent Liabilities
Total Assets	**Total Liabilities**
	Net worth (AKA Owner's Equity) **Total Liabilities and Net Worth**

THREE CATEGORY BALANCE SHEET FORMAT (Two-sided)

Assets	**Liabilities**
Current Assets	Current Liabilities
Intermediate Assets	Intermediate Liabilities
Fixed or Long-term Assets	Long-term Liabilities
Total Assets	**Total Liabilities**

Balance Sheet Methods

- Two main methods are used to develop balance sheets:
  - **Cost-based** method
  - **Market-valuation** method

Cost-based Balance Sheet

For the cost method, intermediate and long-term assets are valued at:

Cost (what was paid originally)
minus
Depreciation taken to date

Cost-based Balance Sheet

- Cost-basis is best for **comparing the farm's financial health over time**
- Not impacted by inflation or big changes in land values
- Therefore, it is a **more conservative approach**
  - …less blown up by market spikes

Market-based Balance Sheet

For this method, Intermediate and long-term assets are **valued at market prices**

- As these assets fluctuate in value, so does the net worth
- This can lead to large changes in financial position due to market prices
  - For example, net worth may be positive due to land value increases, versus due to business activities

Market-based balance sheets are good for **lenders**, and for **comparisons with other farms**

Format and Layout of a Balance Sheet

- It is often recommended to use **two-columns** for assets to take advantage of both the **cost-based method** and the **market-valuation method**

- Having both side by side allows you to see **where the equity** is coming from

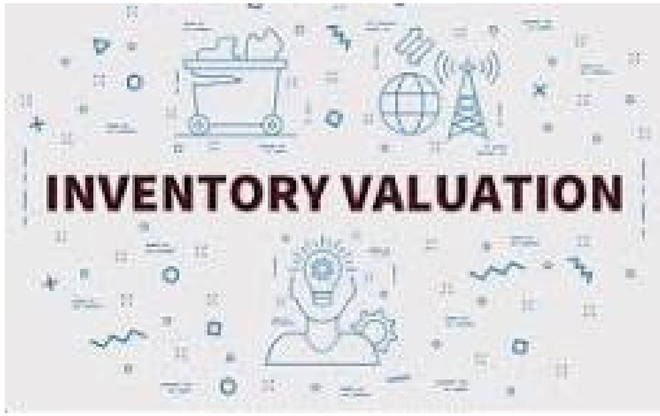
How to Build a Balance Sheet

First, do an **inventory.** Calculate the amount of:

- Crops (bushels, tons, etc.)
- Animals
- Supplies
- … and real estate (land and buildings)

(After the first year, this is tracked on your previous balance sheet, so that you only need to do updates and add/subtract big asset purchases!)

How to Build a Balance Sheet



Second, **value the inventory**.

- Determine the **market value** of the assets
- Evaluate **cost value**:
  - For equipment, land, and buildings, use the amounts paid and depreciation taken

Note again: Using both methods will provide you with the most information in the end!

How to Build a Balance Sheet, cont.

Then, **input the information** into a balance sheet template.

- You can use specific financial software programs, or
- You can use spreadsheets developed for building a balance sheet:
  - For example, MSU has a template and instructions for use
  - Search for “MSU Farm Balance Sheet Template”
  - Or use this url: https://www.canr.msu.edu/resources/farm-balance-sheet-template

Important Notes for Understanding Balance Sheets:

Changes in net worth/owner's equity happen when:

1. The business has a **profit or loss**
2. The **owner invests** more capital from outside the business
3. The **owner withdraws** money of the business
4. Or, when **assets change value** (land!)

Equity does NOT change when:

- A **loan** is taken out to buy an asset
- The business's cash is used to buy assets

Summary

A **balance sheet** is a financial report summarizing the assets, liabilities, and the company's net worth at a point in time.

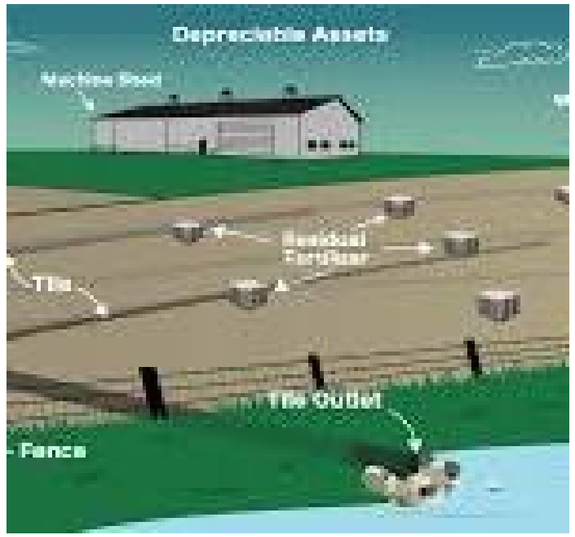
- Assets and liabilities are broken down into **current, intermediate, and long-term** for purposes of calculations.
- **Net worth/ owner's equity** = the value of assets minus the value of liabilities
- Balance sheet can be built on a **cost valuation**, or **market valuation**, or both

Part 2. Methods for Valuing Assets for the Balance Sheet

- Purpose of valuing assets
- Approach
- Depreciation, explained
- Methods of valuation
  - Cost value
  - Cost less accumulated depreciation
  - Net Market Price

Purpose of Developing Values for Assets

- We need to provide values for assets to:
    - Assess inventories
    - Close out books for the year
    - Develop the Balance Sheet



All this helps us to determine the financial position of the business.

Approach: The two C's

Conservatism – try to be prudent and NOT overstate the values of assets and inventory. Be accurate but don't accidentally "put your thumb on the scale"!

Consistency – Use the same valuation methods over time so you are comparing apples to apples.

Different methods are used for different assets in your portfolio.

Depreciation

- **Depreciation** is a method of accounting for the loss in value of an asset based on its expected useful life.
- It spreads the cost of durable assets over time. An amount per year is calculated.
- It accounts for the loss in value due to wear, age, and use.

Depreciation, cont.

- Depreciation is used for **taxes** and for **valuing assets** for accounting purposes

- Characteristics of depreciable assets
  - Useful life of more than one year
  - Expensive, such that the cost cannot be recovered in any single year
  - Owned by the business (not leased)
  - Land is NOT a depreciable asset (because it has an unlimited life)

Depreciation, cont.

Examples of depreciable assets:

- Machinery and equipment
- Buildings
- Fences
- Vehicles for business use
- Irrigation wells

Depreciation, cont.

Information needed to calculate depreciation:

- **Total Cost** of the asset (including price, taxes, delivery, installation)
- **Useful life** – how many years it will be used
- **Salvage value** – what it can be sold for at the end of its useful life
- **Date of purchase**

Valuation Method 1: Cost Value

For the **cost value** method, you record the actual amount of money used to purchase the asset.

- Works well for recent purchases with records: feed, fertilizer, seed, livestock
- Does **not** work as well for valuating:
  - Older assets – buildings and machinery that lose value over time
  - Livestock and crops raised on your farm – does not capture the value you add!

Valuation Method 2: Cost Less Accumulated Depreciation

Cost less accumulated depreciation simply subtracts the amount of depreciation taken so far from the cost of the item.

- For example, After **two** years, a $5,000 piece of equipment that has $1,000 per year depreciation is now valuated at **$3,000**
- This method works well for machinery, buildings, and breeding livestock that you purchased.

Valuation Method 3: Net Market Price

For this method, the asset value is set at the **current market price** – what it could likely be sold for – minus any marketing charges

Works well:

- For items that can be sold quickly
- Where a current market price is available
- For example: hay, grain, feeder livestock, bonds

Valuation Method 3: Net Market Price, cont.

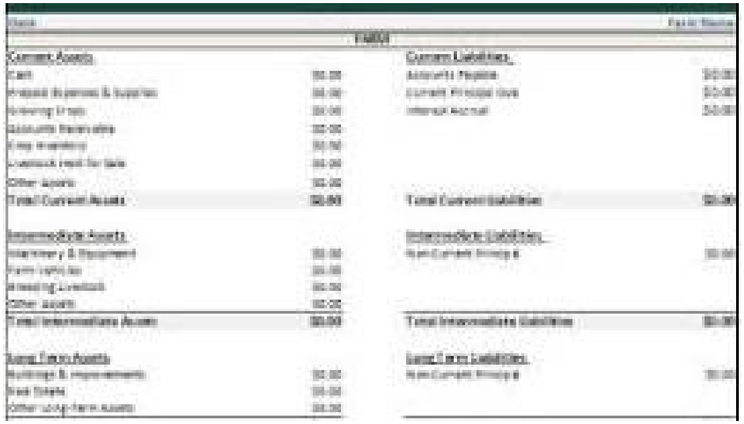
Does **NOT** work well:

- For assets that cannot be sold easily
- For specialized machinery and other assets that are specific to the operation – market price might not reflect their true value
- Where there is no market for the assets

Summary

- **Valuation** is important for accounting as well as financial analysis.
- **Different methods** of valuing assets are used for **different assets**.
- **Actual cost** is used in some cases, and **market value** in others.
- For **longer term assets, depreciation** is used to help calculate asset value.

Part 3. Example Balance Sheets



Watch the following video from MSU Extension about building a balance sheet:
https://www.youtube.com/watch?v=bKh4sHL6B5o

See **Handout 1-** Example Balance Sheet
Note that the balance sheet shows assets on the left, liabilities on the right, and net worth balanced at the bottom (example from FINPACK, U of MN).

Activity 2.

Creating an Enterprise Budget for a Sample Farm

Part 1. Introduction to Enterprise Budgeting and Analysis

Part 2. Revenue, Variable Costs, and Fixed Cost

Part 3. The Concept of Economic Profit

Part 1. Introduction to Enterprise Budgeting and Analysis

- Definitions
- Purpose and Uses for enterprise budgets
- Layouts and examples

Definitions

Enterprise: an individual crop or livestock.

- Examples: corn, cow-calf, blueberries, organic blueberries, cucumbers
- A business can have one, or multiple enterprises

Budget: A forward-looking estimate of income and expenses.

- Essentially, what will it likely cost to produce one unit, and what is the likely revenue?

Enterprise Budget: An organization of revenue, expenses, and economic profit for a single enterprise that is forward-looking, based on historical information and future

Enterprise Budget

- **Purpose**: To estimate costs, returns, and ultimately – profits per unit.
- **Units** are usually per acre, per pound, per head, or other typical operation number.
  - This allows for easy comparison across enterprises.
- Timeframe is (usually) one year (depending on enterprise)
- Goal is to calculate economic profit

Uses for enterprise budgets

- Tool to help make more informed management decisions
  - Answer: which of my crops are most profitable?
  - What prices should I set?
- Enterprise budgets can be put together to create a whole farm budget
- They can be used for calculating changes you are considering
  - Adding animals, value of new equipment to the farm, etc.

Enterprise Budget Layout/ Basics

Major calculation categories are:

- Income /Revenue ($/acre, $/head, etc.)
- Variable costs (operating costs)
- Fixed costs
- Estimated profit

Table 1. Enterprise Budget for Rotation Corn on Average Productivity Soil, 2018

	Per Acre	Per Bushel
Expected Yield per Acre	165.0	
Harvest Price	3.80	
Market Revenue	$627	
Less Variable Costs		
Fertilizer	$135	0.82
Seed	123	0.75
Pesticides	42	0.25
Dryer Fuel	30	0.18
Machinery Fuel	15	0.09
Machinery Repairs	22	0.13
Hauling	17	0.10
Interest	12	0.07
Insurance and Miscellaneous	33	0.20
Total Variable Cost	$429	$2.60
Crop Contribution Margin	198	
Government Payment	25	
Total Contribution Margin	$223	
Less Overhead Costs		
Machinery Ownership	98	0.59
Family and Hired Labor	48	0.29
Land	213	1.29
Total Overhead Cost	$357	$2.16
Earnings or (Losses)	($134)	
Breakeven Price	$4.61	

Income / Revenue section

Finishing Yearling Steers — One Head

	Corn and Hay Ration		Corn and Silage Ration		Your Farm
INCOME	**Quantity**		**Quantity**		
Steer sales ($_____/pound)	1,350 pounds	$	1,350 pounds	$	$
VARIABLE COSTS					
Yearling feeder cost at $1.50 per pound	750 pounds	$1,125.00	750 pounds	$1,125.00	$
Interest at 5%	6.5 months	30.47	6.5 months	30.47	
Feed Costs					
Corn at $4.24 per bushel	60 bushels	$254.40	49.25 bushels	$208.82	$
Fair quality hay at $135.00 per ton	0.30 tons	40.50			
Modified distiller grain at $100.00 per ton	1.14 tons	114.00	1.14 tons	114.00	
Supplement and minerals at $0.23 per pound	95 pounds	21.85	95 pounds	21.85	
Corn silage at $50.88 per ton			1.32 tons	67.16	
Total Feed Costs		$430.75		$411.83	$
Veterinary and health		$8.00		$8.00	$
Machinery and equipment		7.00		7.00	
Marketing, transport, miscellaneous		16.00		16.00	
Interest on variable costs at 5%	3.25 months	6.25	3.25 months	6.00	
Labor at $15.20 per hour	2.5 hours	38.00	2.5 hours	38.00	
Death loss [a]		14.08		13.99	
TOTAL VARIABLE COSTS		$1,675.56		$1,656.29	$
INCOME OVER VARIABLE COSTS		$		$	$
FIXED COSTS					
Machinery, equipment, housing		$14.00		$14.00	$
TOTAL OF ALL COSTS		$1,689.56		$1,670.29	$
INCOME OVER ALL COSTS		$		$	$
Break-even selling price for variable costs per pound		$1.24		$1.23	$
Break-even selling price for all costs per pound		$1.25		$1.24	$

[a] Death loss cost is assumed to be 1% of feeder purchase costs and 0.5% of all other variable costs.
Note: One pound of modified distiller grain contains the energy of 0.5 pound of corn and the protein of 0.36 pound of soybean meal.

Variable/ Operating Costs section

Finishing Yearling Steers — One Head

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Steer sales ($_____/pound)	1,350 pounds	$	1,350 pounds	$	$
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Fixed Costs section

Finishing Yearling Steers — One Head

	Corn and Hay Ration		Corn and Silage Ration		Your Farm
INCOME	**Quantity**		**Quantity**		
Steer sales ($_____/pound)	1,350 pounds	$	1,350 pounds	$	$
VARIABLE COSTS					
Yearling feeder cost at $1.50 per pound	750 pounds	$1,125.00	750 pounds	$1,125.00	$
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Totals and Profit

Note that profit is the “Income over All Costs” line.

- The estimated income is not filled in above, so profit is not calculated in this example.
- Generally, market prices will be used to estimate income.

Finishing Yearling Steers — One Head

	Corn and Hay Ration		Corn and Silage Ration		Your Farm
INCOME	**Quantity**		**Quantity**		
Steer sales ($_____/pound)	1,350 pounds	$ _____	1,350 pounds	$ _____	$ _____
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Break-evens section

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Enterprise Budgets

- See **Handout 2** – Enterprise Budget Template

Part 2. Revenue, Variable, and Fixed Costs

- Income/ Revenue
- Variable Costs
- Fixed Costs

Revenue

Revenue is all the cash and noncash income from the enterprise

- Some enterprises have multiple sources of revenue
- Examples: Oats has grain and straw; dairy has milk, calves, and cull cows

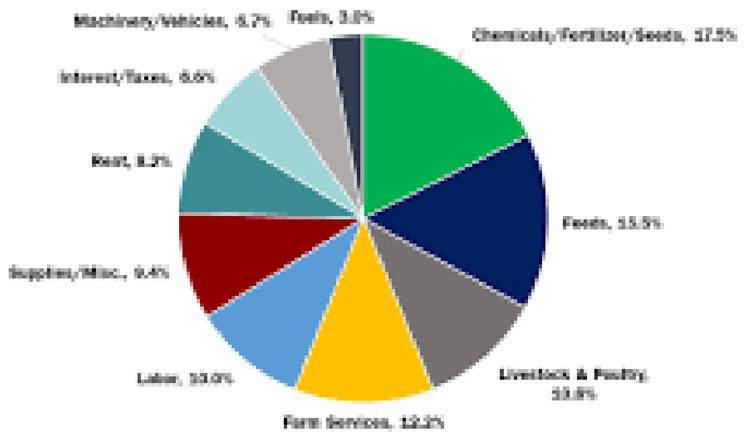
Non-cash revenue:

- For example, with dairy, grain we grow to feed the cows = noncash revenue
- We use the value of what it could have been sold to someone else

Estimating Revenue

- Our expected prices can come from a combination of:
  - Current prices
  - Futures markets
  - Reports
  - Etc.
- Expected yields /quantities produced come from past farm records
  - For new farmers, can get recommendations from MSU Extension, USDA reports, cost of production studies, landlord or previous tenants

Variable Costs



- Also called operating costs, direct costs
- Costs that are incurred when producing a crop
  - Inputs (fertilizer, seed, fuel, etc.)
  - Labor
  - Interest on operating loans
- These costs can increase or decrease with how much is produced (it takes more seed to grow more product)

Estimating Variable Costs

- Expected costs can come from input suppliers, futures markets, etc.
- Expected volumes / quantities of inputs used can come from past farm records
    - If you are new, get recommendations from other producers, MSU Extension, **cost of production studies**, USDA, etc.

Fixed costs

- Costs of ownership of:
  - Machinery
  - Equipment
  - Buildings/facilities
  - Land

- These exist even if no production occurs; these do not change in the short run
- Examples: Taxes, insurance, depreciation on equipment, land charges

Estimating Fixed Costs

- Can assign a percentage cost of buildings and equipment based on the percentage of the enterprise to the whole farm
- Land costs- can be per acre (rental value plus taxes, or other calculation!)
- Can be difficult to estimate!

Part 3. The Concept of Economic Profit

- Opportunity costs
- Economic profit v accounting profit

Opportunity Cost

“Opportunity cost” is an economic concept, defined as:

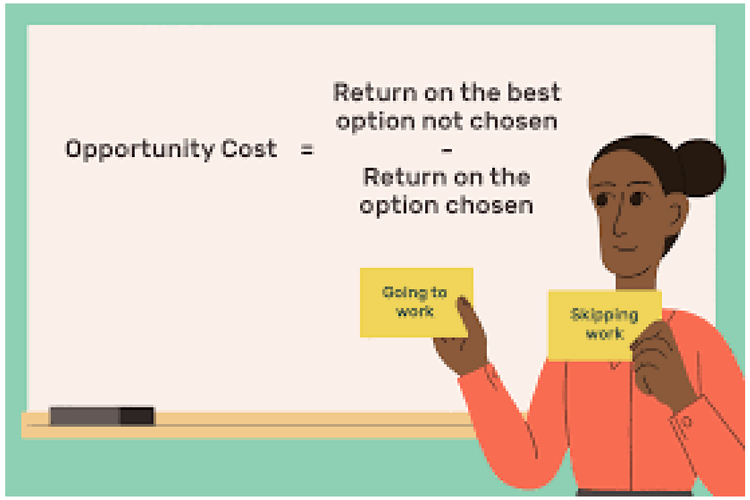
1. The income that could have been earned by selling or renting the input to someone else

   OR

2. The additional income that would have been received if the input had been used in the most profitable alternative use.

Opportunity Cost Examples

- Land:
  - Return you could have received by using the land for something else or renting it out
- Labor (yours)
  - What that labor could earn in another job



Opportunity Cost of Capital

- If I invested my capital in something else, what would it have earned?
  - A realistic investment rate: savings, bonds, etc.
  - In agriculture, the rate is often set at the interest rate on borrowed money
    - So if I am borrowing money at 6% apr, that could be used as the figure for investments I am making in the farm
- For land or buildings, a rental rate can be used

Accounting Profit

Accounting profit is the revenue that remains after paying for variable operating costs and fixed costs

Accounting profit = Total Revenue – (variable and fixed costs)

Economic Profit

Economic profit is the revenue remaining after variable costs, fixed costs, and opportunity costs are subtracted

Economic profit essentially considers what you are making above and beyond what you could otherwise make with your money and time

Economic profit = accounting profit – opportunity cost

Part 4. Profitability and Breakevens

- Income over variable costs
- Profit
- Cost of production / breakeven costs
- Breakeven yield

Income over variable costs

To begin calculating profit, first subtract **variable costs** from income (gross revenue).

This example is for an acre of corn:

Item	Unit	Quantity	Price	Amount
Revenue				
Corn grain	bu	125	$3.68	$460.00
Gross revenue				460.00
Operating expenses				
Seed	thousand s	24	$2.75	66.00
Fertilizer	acre	1	38.00	38.00
Lime	lb	500	0.01	5.00
Pesticides	acre	1	64.45	64.45
Machinery variable costs	acre	1	51.55	51.55
Labor	hr	2.5	14.00	35.00
Hauling and drying	bu	125	0.25	31.25
Crop insurance	acre	1	17.69	17.69
Miscellaneous	acre	1	7.56	7.56
Interest (operating expenses for 6 months)	$	$158.25	6.0%	9.50
Total operating expense				326.00
Income above variable costs				134.00
Ownership expenses				
Machinery depreciation	acre	1	35.00	35.00
Machinery interest	acre	1	16.50	16.50
Machinery taxes and insurance	acre	1	2.50	2.50
Land charge	acre	1	54.00	54.00
Miscellaneous overhead	acre	1	4.00	4.00
Total ownership expenses				112.00
Total expense				438.00
Profit (return to management)				22.00

Profit

Next, subtract **fixed costs**.

Consider which opportunity costs to include… which are not included.

With our corn example:

- Land charge/ opportunity cost is included
- Return to capital is included for the machinery
- Management time is NOT included
  - (see the note “return to management”: management = you!)

Item	Unit	Quantity	Price	Amount
Revenue				
Corn grain	bu	125	$3.68	$460.00
Gross revenue				460.00
Operating expenses				
Seed	thousands	24	$2.75	66.00
Fertilizer	acre	1	38.00	38.00
Lime	lb	500	0.01	5.00
Pesticides	acre	1	64.45	64.45
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Miscellaneous overhead	acre	1	4.00	4.00
Total ownership expenses				112.00
Total expense				438.00
Profit (return to management)				22.00

Cost of Production

Cost of production = **total cost** divided by the **yield**

- It is the cost of producing one unit of the commodity/ product
- In our corn example:

Item	Unit	Quantity	Price	Amount
Revenue				
Corn grain	bu	125	$3.68	$460.00
Gross revenue				460.00
Operating expenses				
Seed	thousands	24	$2.75	66.00
Fertilizer	acre	1	38.00	38.00
Lime	lb	500	0.01	5.00
Pesticides	acre	1	64.45	64.45
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Total ownership expenses				112.00
Total expense				438.00
Profit (return to management)				22.00

Cost of production/ breakeven price

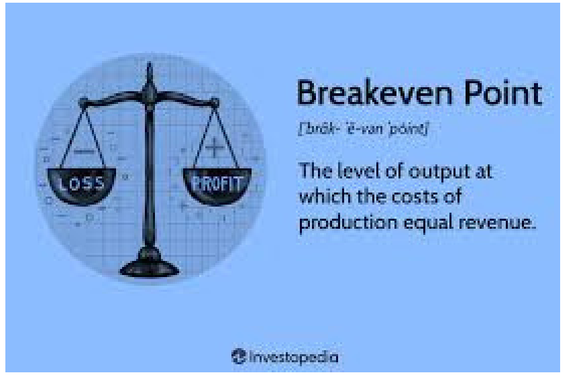
- The cost of production per unit is the same as the breakeven price
- It is the price you would need to get to not lose money
- In our corn example (last slide), at 125 bushels per acre, our breakeven cost was $3.50

Breakeven yield

Breakeven yield is the yield necessary to cover all costs at a certain price

- In other words, if the price is $ x, how much yield do I need to break even with my costs?
- In our corn example:

Breakevens and Profit



In the corn example, the grower made a profit.

- Breakeven price was $3.50, market price was $3.68
- Breakeven yield was 119 bushel per acre, grower achieved 125

Enterprise budgets are very valuable for understanding profitability!

Activity 2 Summary

- **Enterprise Budget:** An organization of revenue, expenses, and economic profit for a single crop or enterprise on a per unit basis
- **Revenue, variable costs, and fixed costs** are all part of the calculation
- **Opportunity costs** consider the revenue possible from other sales or endeavors; **economic profit** calculations adjust for opp. costs
- **Breakeven calculations** help assess the profitability of an enterprise

Activity 3.

Interpreting Financial Information

Part 1. Income Statement

Part 2. Example Income Statement

Part 3. Statement of Owner's Equity

Part 1. Income Statement

- Definitions
- Uses for an income statement
- Major components of the income statement

Definitions

Income statement: A report that summarizes the income and expenses for a business and computes the resulting profit – usually for a 1-year period.

… also known as the “Profit and Loss” or P&L statement.

Income Statement Development

To create an income statement, the following are needed:

- Beginning balance sheet
- Ending balance sheet
- Summary of receipts and expenditures (called a “statement of cash flows”

Uses for an Income Statement

- Develops a **net farm income** number to better understand your bottom line
- Track profitability and development of ‘net worth’ in the business
- See what cash flow looks like throughout the year
- Conduct financial analysis, looking at ratios and measurements and comparing to other farm operations

Components of an income statement

There are 4 main components of an income statement:

- Revenue
- Expenses
- Accrual adjustments
- Capital /depreciation adjustments

Gross Farm Revenue

Gross farm revenue is all of the business revenue earned during the accounting period

This can be cash or non-cash revenue:

- **Cash**: Crop sales, livestock sales, milk sales, government payments, custom work income, crop insurance income
- **Non-cash**: accrual adjustments for changes in inventories, accounts receivable, etc.

Expenses

Expenses include all cash and non-cash expenses that are incurred to produce revenue during the accounting period.

Examples:

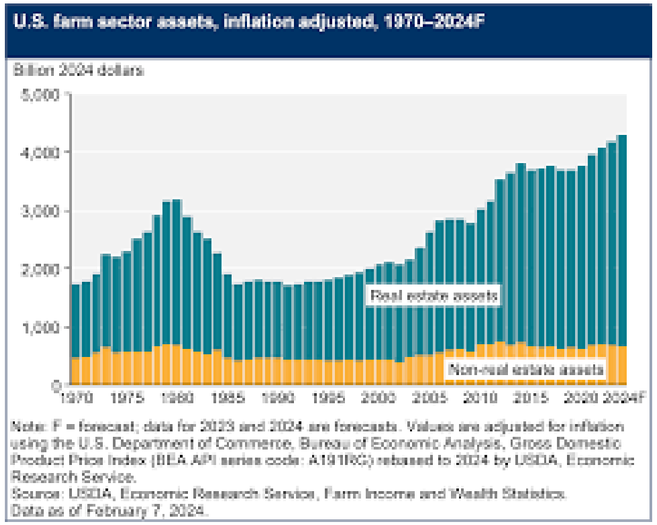
- Purchases of feed, fertilizer, seed, market livestock, vet bills, fuel, repairs, insurance, utilities, rent or lease payments
- Depreciation
- Accrual adjustments for prepaids, changes in accounts payable, etc.

Accrual Adjustments

Using information from balance sheets, **accrual adjustments** are made to match revenues and expenses to production activities during the accounting year. Types of adjustments:

- Revenue – changes in inventory values
- Expense increasing – change in accounts payable- what is owed
- Expense decreasing – changes in prepaid expenses – less or more

Capital Adjustments



Include:

- Gain or loss on the sale of **capital assets**
- Changes in the **depreciation** schedule

Part 2. Example Income Statement

- Detailed sheets for cash crop farm with some livestock to follow:

BASIC STRUCTURE of the Balance Sheet

Revenue

Expenses

Income from operations

Interest expense and capital adjustments

Net farm income

Revenue		
Cash crop sales	$391,312	
Change in crop inventories	-$1,120	
Change in crop accounts receivable	-1,437	
Total Crop Revenue		388,755
Market livestock sales	80,153	
Livestock product sales	0	
Change in market livestock inventories	0	
Change in livestock accounts receivable	400	
Total market livestock revenue		80,553
Raised breeding livestock sales	9,300	
Change in base value of raised breeding livestock	1,000	
Gain or loss on purchased breeding livestock sales	0	
Total breeding livestock revenue		10,300
Government program and crop insurance payments	21,000	
Other farm income	13,400	
Increase (decrease) in other accounts receivable	0	
Gross revenue		**$514,008**
Expenses:		
Purchased feed and grain	22,880	
Purchased market livestock	0	
Change in feed inventories	520	
Other cash operating expenses:		
Crop expenses	177,100	
Livestock expenses	30,200	
Fuel, oil	23,410	
Labor	0	
Repairs, maintenance	24,000	
Property taxes	7,420	
General farm insurance	8,300	
Crop insurance	17,120	
Cash land rent	41,200	
Other: utilities	5,400	
Adjustments:		
Change in accounts payable	650	
Change in accrued expenses	-640	
Change in prepaid expenses	-1,100	
Change in unused supplies	-7,010	
Change in investment in growing crops	6,275	
Depreciation expense	35,755	
Amortization of capital leases	0	
Total operating expenses		**$391,480**
Income from operations		**$122,528**
Other revenue and expenses:		
Cash interest paid on current loans	6,915	
Change in accrued interest on current loans	-250	
Cash interest paid on noncurrent loans	21,217	
Change in accrued interest on noncurrent loans	120	
Total interest expense	28,002	
Gain or loss on sale of capital assets:		
Machinery	1,100	
Land	0	
Other	0	
Net farm income		**$95,626**

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REVENUE

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REVENUE: ACCRUAL ADJUSTMENTS

EXPENSES

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EXPENSES: DEPRECIATION

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NORMAL PRODUCTION ACTIVITIES:

Normal activities = $122,528

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Change in accrued interest on noncurrent loans	120	
Total interest expense	28,002	
Gain or loss on sale of capital assets:		
Machinery	1,100	
Land	0	
Other	0	
Net farm income		**$95,626**

Finance and investment activities! Not normal day-to-day operations

Net Farm Income is **$95,626**

Part 3. Statement of Owner’s Equity

- Definitions
- Changes in owner equity
- Creating a statement of owner’s equity
- Example from large dairy farm

Definitions

Statement of owner's equity: shows the sources of change in owner's equity over time.

Goal is to show how much **net worth** changed over the year, and what lead to the change

Accounting

Changes in Equity

Changes in owner equity occur when:

1. The business has a profit or loss, OR
2. The owner invests more capital from outside the business
3. The owner withdraws money from the business, OR
4. Assets change value

No change occurs when cash or loans are used to purchase assets

Creating a Statement of Owner's Equity

- Look at net worth on the beginning and ending balance sheets for the year
- Use the income statement to determine net farm income

  Let's look at an **example** from a large dairy farm, with building, land, machinery and other assets:

2019 BALANCE SHEET

- Net worth was $5,578,390

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Mich Dairy Farmer
12/31/2019 - MI Average Dairy Farm Balance Sheet

Current Assets			Value
Cash and checking (Schd A)			145,680
Prepaid exp. & suppl. (Schd B)			103,445
Growing crops (Schd C)			69,752
Accounts receivable (Schd D)			98,388
Hedging accounts (Schd E)			-812
Other current assets (Schd F)			20,574
Crops (Schd G)	Quantity	Value/Unit	
Corn	2	318792.00/bu.	637,584
Soybeans	1	-/bu.	-
W. Wheat	1	-/bu.	-
Mkt Ivst (Schd H)	No.	Value/Unit	
Bull Calves	1	19001.00/head	19,001
Total Current Assets			**1,093,612**

Current Liabilities				Balance
Accrued interest				2,364
Payables & accr exp (Schd T)				104,392
	Int		P & I	Principal
Current loans (Schd U)	Rate		Due	Balance
FCS-Operating	6.00		-	87,086
Principal due within 12 months on term liabilities				169,838
Total Current Liabilities				**363,680**

Intermediate Assets		Cost	Market
Brdg Ivst (Schd I)	No.	Value	Value
Milking Cows	600	1,424,178	1,323,328
Dry Cows	-	-	-
Bred Heifers	-	-	-
Machinery (Schd J)		1,191,398	1,395,815
Titled vehicles (Schd K)		18,485	18,847
Other intermed. (Schd L)		230,546	230,546
Total Intermediate Assets		**2,864,607**	**2,968,536**

Intermediate Liabilities (Schd V)					
	Int	Principal	P & I	Principal	Intermed
Loan	Rate	Balance	Due	Due	Balance
FCS-Machinery	6.00	578,718	23,246	69,838	508,880
Total Intermediate Liabilities					**508,880**

Long Term Assets		Cost	Market
Land (Schd M)	Acres	Value	Value
Home Farm	500	1,086,160	1,991,432
Farm 2	-	-	-
Bldgs & improve. (Schd N)		1,146,301	1,376,486
Other long term (Schd O)		9,098	9,098
Total Long Term Assets		**2,241,559**	**3,377,016**

Long Term Liabilities (Schd W)					
	Int	Principal	P & I	Principal	Lg Term
Loan	Rate	Balance	Due	Due	Balance
Individual-Land Contrac	5.00	1,506,399	47,793	100,000	1,406,399
Total Long Term Liabilities					**1,406,399**

Total Farm Assets		**6,199,778**	**7,439,164**
Personal Assets (Schd P)		414,877	429,628
Total Assets (a)(b)		**6,614,655**	**7,868,792**

Total Farm Liabilities			**2,278,959**
Personal Liabilities (Schd X)			11,443
		Cost	Market
Total Liabilities (d)(e)		2,290,402	2,290,402
Retained Earnings/Contributed Capital	[a-d]	4,324,253	
Market valuation equity	[b-a]		1,254,137
Net Worth	[b-e]		**5,578,390**

2020 BALANCE SHEET

- Net worth was $5,868,664

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Mich Dairy Farmer
12/31/2020 - MI Average Dairy Farm Balance Sheet

Current Assets		Value
Cash and checking (Schd A)		186,601
Prepaid exp. & suppl. (Schd B)		113,911
Growing crops (Schd C)		70,478
Accounts receivable (Schd D)		125,462
Hedging accounts (Schd E)		-
Other current assets (Schd F)		26,954
Crops (Schd G)	Quantity Value/Unit	
Corn	2800236.50/bu.	600,473
Soybeans	1 -/bu.	-
W. Wheat	1 -/bu.	-
Mkt Ivst (Schd H)	No. Value/Unit	
Bull Calves	1 21821.00/head	21,821
Total Current Assets		**1,145,700**

Current Liabilities				Balance
Accrued interest				5,766
Payables & accr exp (Schd T)				93,100
	Int		P & I	Principal
Current loans (Schd U)	Rate		Due	Balance
FCS-Operating	6.00		-	97,208
Principal due within 12 months on term liabilities				173,177
Total Current Liabilities				**369,251**

Intermediate Assets		Cost	Market
Brdg Ivst (Schd I)	No.	Value	Value
Milking Cows	600	1,437,533	1,360,735
Dry Cows	-	-	-
Bred Heifers	-	-	-
Machinery (Schd J)		1,286,330	1,492,038
Titled vehicles (Schd K)		22,952	23,981
Other intermed. (Schd L)		240,791	240,797
Total Intermediate Assets		**2,987,606**	**3,117,551**

Intermediate Liabilities (Schd V)					
	Int	Principal	P & I	Principal	Intermed
Loan	Rate	Balance	Due	Due	Balance
FCS-Machinery	6.00	574,124	133,460	73,177	500,947
Total Intermediate Liabilities					**500,947**

Long Term Assets		Cost	Market
Land (Schd M)	Acres	Value	Value
HomeFarm	500	1,107,587	2,017,361
Farm 2	-	-	-
Bldgs & improve. (Schd N)		1,156,529	1,391,869
Other long term (Schd O)		13,976	15,576
Total Long Term Assets		**2,278,092**	**3,424,806**

Long Term Liabilities (Schd W)					
	Int	Principal	P & I	Principal	Lg Term
Loan	Rate	Balance	Due	Due	Balance
Individual-Land Contrac	5.00	1,510,540	120,323	100,000	1,410,540
Total Long Term Liabilities					**1,410,540**

Total Farm Assets	**6,411,398**	**7,688,057**
Personal Assets (Schd P)	452,564	472,229
Total Assets (a)(b)	**6,863,962**	**8,160,286**

Total Farm Liabilities			**2,280,738**
Personal Liabilities (Schd X)			10,884
		Cost	Market
Total Liabilities (d)(e)		2,291,622	2,291,622
Retained Earnings/Contributed Capital	[a-d]	4,572,340	
Market valuation equity	[b-a]		1,296,324
Net Worth	[b-e]		**5,868,664**

Statement of Owner's Equity

Change in net worth
= $ 296,302

- Look at the different categories of change. Note that the **value of capital** assets went up $42,187.
- Looking back at the balance sheets, we can see that much of this was from land value and building improvements.

In this case there is a discrepancy, so we will need look deeper to try to reconcile it at some point.

Statement of Owner's Equity		
(a) Beginning net worth		5,578,390
Net farm income		315,944
Personal income	(+)	30,743
Family living expense	(-)	80,709
Income taxes accrued	(-)	4,727
Change in personal assets	(+)	31,151
Change in nonfarm accounts payable	(+)	-
(b) Total change in retained earning	(=)	292,402
Capital contributions		2,564
Capital distributions	(+)	40,851
(c) Total change on contributed capital	(=)	-38,287
Change in market value of capital assets		42,187
(d) Total change in market valuation	=	42,187
(e) Total change in net worth	(b + c + d)	296,302
Ending net worth calculated	(a + e)	5,874,692
Ending net worth reported		5,868,664
Discrepancy		6,028

Part 4. Benchmarking and Financial Analysis Metrics

- Definitions
- Financial ratios
- Example farm’s comparison to standards
- Develop an improvement plan

Definitions

Benchmarking is a process of comparing your business performance with different standard.

We look at a number of financial ratios that can be calculated from your farm's accounting records.

Your farm's ratios can then be compared to those of other farms, from databases (such as FINBIN)

Financial Ratios

The **financial ratios** that can be helpful for analyzing farm performance include:

- Liquidity
- Solvency
- Profitability
- Repayment Capacity
- Efficiency

Next slide shows a guide for where your ratios compare to standards:

Beginning
Farmer

		Vulnerable	Strong
LIQUIDITY			
Current ratio		1.3	2.0
Working capital to gross revenue		10%	30%
SOLVENCY			
Farm debt-to-asset ratio		60%	30%
PROFITABILITY			
Rate of return on farm assets		4%	8%
Rate of return on farm equity		3%	10%
Operating profit margin ratio		15%	25%
Asset turnover rate		30%	45%

		Vulnerable	Strong
REPAYMENT CAPACITY			
Term-debt coverage ratio		1.3	1.8
Replacement margin coverage ratio		1.1	1.5
FINANCIAL EFFICIENCY			
Operating expense ratio		80%	60%
Depreciation expense ratio		10%	5%
Interest expense ratio		10%	5%
Net farm income ratio		10%	20%

Understanding Ratios

MSU Extension has some articles that explain the different ratios, how they are calculated, and what they mean.

Contact an MSU Extension Farm Business Management educator to help analyze your farm's financial ratios!

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Here is an example of a **set of ratios** for a farm, next to their income statement:

2019 Financial Analysis Executive Summary

Income Statement

Crop sales	55,737	
Crop inventory change	-29,700	
Gross crop income		26,037
Livestock sales	2,991,330	
Livestock inventory change	-	
Gross livestock income		2,991,330
Government payments		83,822
Other cash farm income		99,016
Change in accounts receivable		29,648
Gain or loss on hedging accts		-
Change in other assets		28,278
Gain or loss on breeding lvst		55,500
Gross farm income		**3,313,631**
Cash operating expense	2,584,871	
Change in prepaid exp and supplies	-61,351	
Change in growing crops	-6,500	
Change in accounts payable	-	
Depreciation	217,109	
Total operating expense		2,734,130
Interest paid	27,451	
Change in accrued interest	2,163	
Total interest expense		29,614
Total expenses		**2,763,743**
Net farm income		**549,888**

Financial Standards Measures

Liquidity	**Beg**	**End**
Current ratio	18.66	28.22
Working capital	1,442,967	1,525,316
Working capital to gross revenues	43.5 %	46.0 %

Solvency (market)	**Beg**	**End**
Debt to asset ratio	1 %	7 %
Debt to equity ratio	0.02	0.08

Profitability	**Cost**	**Market**
Net farm income	549,888	549,779
Rate of return on assets	5.7 %	5.1 %
Rate of return on equity	5.6 %	5.0 %
Operating profit margin	16.3 %	16.3 %

Repayment Capacity	
Term debt coverage ratio (farm only)	8.50
Replacement margin coverage ratio	3.74

Efficiency	**Cost**	**Market**
Asset turnover rate	34.7 %	31.5 %
Operating expense ratio		76.0 %
Depreciation expense ratio		6.6 %
Interest expense ratio		0.9 %
Net farm income ratio		16.6 %

Here is a table with the average ratios for a large group of farmers in a similar farm category to ours (from FINBIN).

We can **compare our numbers** (left) with the group numbers (right).

Again, talk to a financial analyst to help interpret these!

2019 Financial Analysis

s Executive Summary

Financial Standards Measures

Liquidity	**Beg**	**End**
Current ratio	18.66	28.22
Working capital	1,442,967	1,525,316
Working capital to gross revenues	43.5 %	46.0 %
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Debt to asset ratio	1 %	7 %
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Net farm income	549,888	549,779
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Rate of return on equity	5.6 %	5.0 %
Operating profit margin	16.3 %	16.3 %
Repayment Capacity		
Term debt coverage ratio (farm only)		8.50
Replacement margin coverage ratio		3.74
Efficiency	**Cost**	**Market**
Asset turnover rate	34.7 %	31.5 %
Operating expense ratio		76.0 %
Depreciation expense ratio		6.6 %
Interest expense ratio		0.9 %
Net farm income ratio		16.6 %

DATABASE

	Group Median
Current ratio - ending	1.40
Working capital - ending	72,241
Working capital to revenue ratio - er	18.5
Farm debt to asset ratio (mkt)	46
Farm equity to asset ratio (mkt)	54
Farm debt to equity ratio (mkt)	0.83
Rate of return on farm assets (cost)	2.3
Rate of return on farm equity (cost)	1.0
Operating profit margin (cost)	7.9
Net farm income (cost)	35,520
EBIDTA (cost)	100,893
Capital debt repayment capacity	70,442
Capital debt repayment margin	16,447
Replacement margin	1,663
Term debt coverage ratio	1.24
Replacement coverage ratio	1.00
Asset turnover rate (cost)	31.0
Operating expense ratio	77.8
Depreciation expense ratio	6.9
Interest expense ratio	5.0
Net farm income ratio	8.9

Develop an Improvement Plan

- Looking at the ratios, we see the farm has strong performance in most areas.
- Where it could improve is in the area of efficiency.
- Work with your farm advisor to develop a plan to address this area!

Activity 3 Summary

- **Income Statement:** The income statement summarizes the income and expenses and computes profit over time.
- **Statement of Owner Equity:** Shows sources of change in net worth over the year (or other accounting period)
- **Benchmarking:** Look at your farm's ratios to see how your farm is performing, and compare those rations to other, similar farms.

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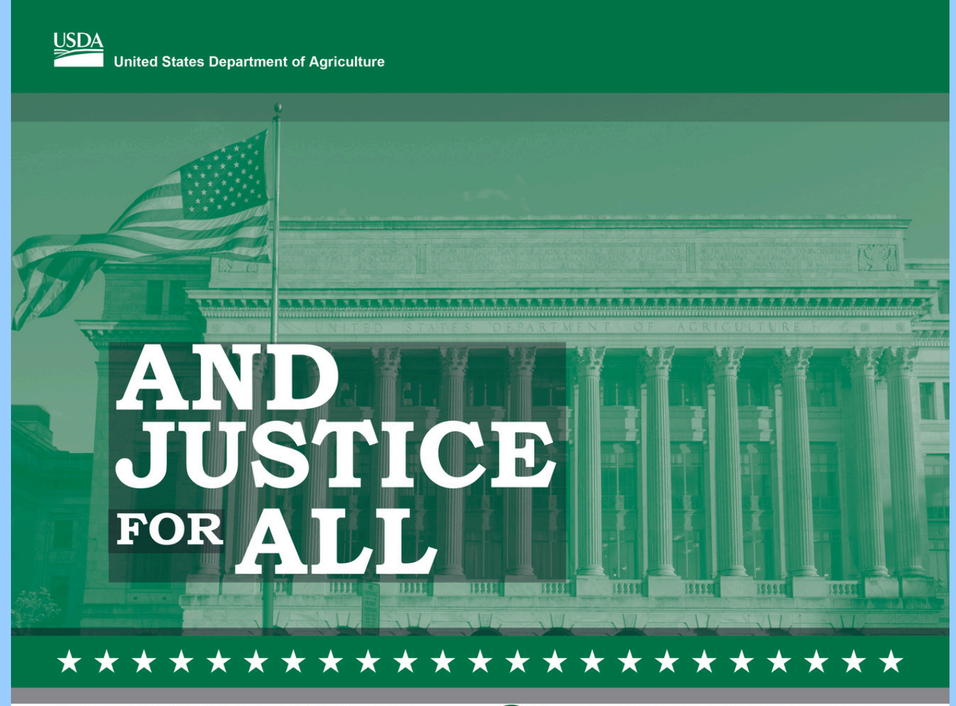

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Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410; or

fax:
(833) 256-1665 or (202) 690-7442;

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