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Colegio de Ciencias Agrícolas
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Farm Accounting: Inventory and Balance Sheet Part 1



United States Department of Agriculture
National Institute of Food and Agriculture



Dr. Alexandra Gregory
Professor
Department of Agricultural Economics and Rural
Sociology
alexandra.gregory@upr.edu

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OBJECTIVES

- Be able to design and prepare an inventory for a company
- Know different types of inventory
- Assign value to assets using different valuation methods
- Estimate and apply the depreciation method according to the asset



RESOURCES

On the website www.mercadeoagricolapr.com, you can find this presentation and there are also tools you can use such as a spreadsheet where you can enter the accounting and financial information of the business. It can be found on the following web pages, and the file is called:

Accounting and Financial Records in Excel for Farms

<https://www.mercadeoagricolapr.com/herramientas/hojas-de-calculo/>

<https://www.uprm.edu/agricultores-desventajados/hojas-de-calculo/>



Accounting Records

- Cash flow
- Income Statement
- Inventory
- Balance Sheet



INVENTORY USES

- Know what we have on the farm
- Serves as evidence for assistance in cases of disasters
- Together with liabilities, it shows the true economic situation
- Essential for filing tax reports
- A control tool
- Allows determining which and how many items need to be restocked
- Helps plan when to restock the inventory
- Allows managing perishable materials more efficiently



INVENTORY USES

- **Is the first document financial institutions asked to apply for a business loan.**



¿WHAT DO WE HAVE TO INCLUDE IN AN
INVENTORY?



ASSETS



ASSETS

- Items or rights owned by a company.
- From which an economic benefit is expected to be received.



CURRENT ASSETS

- Include materials or products that are ready for sale.
- All merchandise held by a company in the warehouse valued at acquisition cost, for sale or productive activities.
- These are assets used in the production process or kept on the farm with the purpose of being converted into cash, sold, or consumed within a short period of time.



EXAMPLE OF CURRENT ASSETS

- Cash or money in the bank
- Accounts receivable within a year or less
- Goods that can be converted into cash in a short time
- Fattening animals
- Animal feed inventory
- Fertilizer inventory
- Pesticides
- Products for sale
- Fertilizers
- Medications



INTERMEDIATE ASSETS

- Assets that support the production process but are not used up or sold within one year, and are not attached to the land.



Examples of Intermediate Assets:

- Machinery and equipment
- Office equipment
- Tools
- Breeding animals



FIXED ASSETS

- Assets that support the production process but are not used up or sold within one year and are attached to the land.



EXAMPLES OF FIXED ASSETS

- Barns and/or structures
- Land
- Perennial plants or trees
- Ponds
- Irrigation canals
- Irrigation systems
- Fences
- Trees in the inventory



TREES IN THE INVENTORY

- It is very important to include all the trees on the farm.
- The value assigned to a tree will depend on its age.
- **Example:**
It is not the same to buy a 10-acre farm that already has mangoes in production as to buy a 10-acre farm without any crops.
- The farm with crops, in this case mangoes, has a higher value because of the inventory of trees and the fact that income may be generated sooner than starting from new planting.



Example of a loan later on



Exercise: Indicate the type of asset

- Truck
- Rabbits
- Hens
- Tractor
- Dairy cow
- Barn
- Pond
- Fences
- Refrigerator
- Medications



LIABILITIES OR DEBTS



LIABILITIES OR DEBTS

- Amount of money owed to third parties.
- Debt responsibility held by the agricultural business.



CURRENT LIABILITIES

- Debts due within one year or less, or during the accounting period.

Example:

- Taxes
- Accounts payable within 12 months



INTERMEDIATE LIABILITIES

- Debts due in less than 10 years.

Example:

- Loan balance
- Credit cards that cannot be paid in less than 10 years



FIXED LIABILITIES

- Debts due in more than ten years.

Example:

- Mortgages payable



TYPES OF INVENTORY

- Inventory of finished products
- Inventory of products in process
- Inventory of raw materials
- Inventory of supplies



INVENTORY

- **Inventory of finished products:**
Includes all products acquired that must be modified to be ready for sale.
- **Inventory of products in process:**
Details of products currently in the process of being manufactured.
It must include quantities of materials, labor, and all production costs incurred up to the closing date.
- **Inventory of raw materials:**
List of all materials that will be used in the production or manufacturing process.
- **Inventory of supplies:**
Includes all materials used to produce a given product.
These cannot be quantified exactly.



TYPES OF INVENTORY

- In agricultural businesses, not all types of inventory are necessarily kept.

Most agricultural businesses keep an annual inventory that includes: supplies, raw materials, tools, equipment, land, and other assets.



SYSTEMS FOR KEEPING INVENTORY

- **Perpetual**
- **Periodic**



PERPETUAL INVENTORY

- Maintains a continuous record for each inventory item; as inputs are used, the inventory decreases, and as inputs are purchased, it increases.
Useful for preparing monthly, quarterly, or provisional financial statements.
- The business can determine the ending inventory cost and cost of goods sold directly from accounts without physical counting.
This system provides a high degree of control because records are always up to date.



When to use Perpetual Inventory

- When merchandise cannot be visually examined and verified immediately.
- When companies prepare monthly financial statements.
A physical count is still required once a year to verify accuracy and detect possible theft.



PERIODIC INVENTORY

- The business does not maintain a continuous record of available inventory.
- At the end of the period, a physical count is done, and unit costs are applied to determine the ending inventory cost.
- This figure appears on the Balance Sheet and is also used to calculate the cost of goods sold.
- Also called the **physical system**, as it relies on an actual physical count.



When to use Periodic Inventory

- Generally used for inventory items with low unit cost.
- The owner must be able to control inventory visually.
Low-cost items may not justify the expense of maintaining continuous records.



¿CUÁNDO UTILIZAR INVENTARIO PERIODICO?

- Los artículos de bajo costo pueden no ser lo suficientemente valiosos para garantizar el costo de llevar un registro al día del inventario disponible.



INVENTORY CATEGORIES

- **ASSETS**

- Current
- Intermediate
- Fixed

- **LIABILITIES**

- Current
- Intermediate
- Fixed

HOW TO GIVE A VALUE TO ASSETS





ACCOUNTING RULES FOR ESTABLISHING THE VALUE OF AN ASSET

- **Conservatism:** Do not use the highest value of the asset; use the lower one.
- **Consistency:** The same valuation method must be used every year.



WAYS TO VALUE ASSETS

- Market value
- Purchase cost
- Lower cost
- Production cost
- Cost (manufacturer's value) minus depreciation



MARKET VALUE

- The current price of the product in the market or the price you would pay if you were to purchase it now.



COST

- Assets can be valued at their original cost (feed, fertilizers, land).
- Inventories are normally accounted for at historical cost, as required by accounting principles.
- Inventory cost is the price the business paid to acquire the item, not its selling price.



PRODUCTION COST

- Assets produced on the farm can be valued at their production cost. There are three methods for assigning production costs:
 - Average cost
 - LIFO (Last In, First Out)
 - FIFO (First In, First Out)



AVERAGE COST

- The simplest of the three methods.
- Estimate total production cost and divide by the number of units produced.



COST MINUS DEPRECIATION

- Intermediate and fixed assets support production over more than one year and lose value over time (machinery, buildings, fences, vehicles, etc.).
- They must be assigned a value based on depreciation.



The inventory includes all assets that must be assigned a value - only the depreciated value is included.



DEPRECIATION

- Loss of value of assets due to:
- Use
- Obsolescence
- Wear
- Deterioration



REASONS FOR DEPRECIATION

- Estimate current (book) value
- Calculate expense
- Adjust income for tax purposes



TYPES OF DEPRECIATION

- Straight-line
- Declining balance (various methods)
- Sum-of-the-years' digits



DEFINITIONS

- **Useful life:** The lifespan of an asset according to the manufacturer.
- **Residual value:** The asset's value at the end of its useful life (usually 10% of original cost).



STRAIGHT-LINE DEPRECIATION

- Depreciation is constant for each year of the asset's useful life.
- The simplest method.



STRAIGHT-LINE DEPRECIATION

$$\text{Depreciation} = \frac{\text{Manufacturer Cost} - \text{Residual Value}}{\text{Useful Life}}$$



Depreciation

A 2023 truck with a manufacturer's cost of \$20,000, residual value of 10% (\$2,000), and a useful life of 5 years.

$$\text{Depreciation} = \frac{\$20,000 - \$2,000}{5} = \$3,600$$

Year	Initial Value^{1/}	Depreciation	Initial value – Depreciation= Final Value
2023	\$20,000	\$3,600	\$16,400
2024	\$16,400	\$3,600	\$12,800
2025	\$12,800	\$3,600	\$9,200
2026	\$9,200	\$3,600	\$5,600
2027	\$5,600	\$3,600	\$2000
2028	\$2,000	\$0	\$2,000
2029	\$2,000	\$0	\$2,000

1/ if you purchase the asset used, you still have to us the manufacturers value



¿The book value in 2025 ?

\$9,200

This value is the one you include in the 2025 inventory.



SUMA DE AÑOS DÍGITOS

$$\text{Annual Dep.} = (\text{cost} - \text{res.value}) \times \frac{\text{assets remaining useful life}}{\text{sum of the digits}}$$



EXAMPLE

- Using the same 2023 truck: cost \$20,000, residual value 10% (\$2,000), useful life 5 years.



SUM OF THE DIGITS

- Sum of the digits = $1+2+3+4+5$
- Sum of the digits = $(n^2 + n) / 2$



ANNUAL DEPRECIATION

$$\text{Dep 1 año} = (20,000 - 2,000) \times \frac{5}{15} = \$6,000$$

$$\text{Dep 2 año} = (20,000 - 2,000) \times \frac{4}{15} = \$4,800$$



ANNUAL DEPRECIATION

Year	Remaining Useful life	Sum of thes Digits	Depreciation
2023	5	15	\$6,000
2024	4	15	\$4,800
2025	3	15	\$3,600
2026	2	15	\$2,400
2027	1	15	\$1,200

Year	Initial Value^{1/}	Depreciation	Initial value – Depreciation = Final Value
2023	\$20,000	\$6,000	\$14,000
2024	\$14,000	\$4,800	\$9,200
2025	\$9,200	\$3,600	\$5,600
2026	\$5,600	\$2,400	\$3,200
2027	\$3,200	\$1,200	\$2,000



COMPARACIÓN DE MÉTODOS

Year	Straight line	Doble Declining Balance	Declining Balance	Suma of the Digits
2019	\$3,600	\$8,000	\$7,381	\$6,000
2020	\$3,600	\$4,800	\$4,657	\$4,800
2021	\$3,600	\$2,880	\$2,938	\$3,600
2022	\$3,600	\$1,728	\$1,854	\$2,400
2023	\$3,600	\$592	\$1,170	\$1,200



SUMMARY

- The type of depreciation depends on how fast you want to depreciate the asset
- You can use similar methods from other industries
- You have to use always the same method for the same asset, in other words use the consistency rule



Spreadsheet to depreciate assets

- This webpage www.mercadeoagricolapr.com, has an Excel Spreadsheet to depreciate assets. Although is in Spanish, you will be able to find an English version in the next month.

<https://www.mercadeoagricolapr.com/herramientas/hojas-de-calculo/>

<https://www.uprm.edu/agricultores-desventajados/hojas-de-calculo/>



Example for USDA–FSA Loan Application Quick Guide: Farm Loan Application

Application Guide: [Farm Loans Application Quick Guide for Individuals](https://www.farmers.gov/sites/default/files/documents/farmersgov-loan-quick-guide-individual.pdf)

<https://www.farmers.gov/sites/default/files/documents/farmersgov-loan-quick-guide-individual.pdf>



Tree Inventory

FSA-2001(1/13/2023)

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FARM ASSETS SCHEDULES (Attach additional pages if necessary)				
4A. SCHEDULE A - CASH & EQUIVALENTS		\$ Market Value		
Cash on Hand				
Checking				
Savings				
4B. SCHEDULE B - ACCOUNTS RECEIVABLE		\$ Market Value		
4C. SCHEDULE C - CROP INVENTORY				
Type	Measure	# Units	\$/Unit	\$ Market Value
4D. SCHEDULE D - GROWING CROPS				
Type	# Acres	\$/Acre		\$ Market Value
4E. SCHEDULE E - MARKET LIVESTOCK & POULTRY				
Type	# Head	Weight	\$/Unit	\$ Market Value
4F. SCHEDULE F - LIVESTOCK PRODUCTS				
Type	Measure	# Units	\$/Unit	\$ Market Value
4G. SCHEDULE G - PREPAID EXPENSES & SUPPLIES		\$ Market Value		
4H. SCHEDULE H - MACHINERY & EQUIPMENT				
Type	Make	Model	Year	\$ Market Value
4I. SCHEDULE I - FARM VEHICLES				
Type	Make	Model	Year	\$ Market Value
4J. SCHEDULE J - BREEDING STOCK				
Type	Raised/Purch	# Units	\$/Unit	\$ Market Value
4K. SCHEDULE K - NOTES RECEIVABLE		\$ Market Value		
4L. SCHEDULE L - BUILDING & IMPROVEMENTS		\$ Market Value		
4M. SCHEDULE M - FARM REAL ESTATE- LAND				
Farm Name	Total Acres	% Owned	\$/Acre	\$ Market Value

Include Crops that are going to be harvested in 3 months or earlier

Include all trees, include the numbers per acre

Example 1,500 mango trees and 100 trees per acre and they have been planted 5 years, you can ask for the FSA value or you can include the cost for planting and maintaining lets say \$17.90 per tree.

$$1,500 \times 17.90 = \$26,850$$

Include the market value for the land



Animals in the Inventory

FSA-2001(1/13/2023)

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FARM ASSETS SCHEDULES (Attach additional pages if necessary)				
4A. SCHEDULE A - CASH & EQUIVALENTS		\$ Market Value		
Cash on Hand				
Checking				
Savings				
4B. SCHEDULE B - ACCOUNTS RECEIVABLE		\$ Market Value		
4C. SCHEDULE C - CROP INVENTORY				
Type	Measure	# Units	\$/Unit	\$ Market Value
4D. SCHEDULE D - GROWING CROPS				
Type	# Acres	\$/Acre	\$ Market Value	
4E. SCHEDULE E - MARKET LIVESTOCK & POULTRY				
Type	# Head	Weight	\$/Unit	\$ Market Value
4F. SCHEDULE F - LIVESTOCK PRODUCTS				
Type	Measure	# Units	\$/Unit	\$ Market Value
4G. SCHEDULE G - PREPAID EXPENSES & SUPPLIES		\$ Market Value		
4H. SCHEDULE H - MACHINERY & EQUIPMENT				
Type	Make	Model	Year	\$ Market Value
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4L. SCHEDULE L - BUILDING & IMPROVEMENTS		\$ Market Value		
4M. SCHEDULE M - FARM REAL ESTATE- LAND				
Farm Name	Total Acres	% Owned	\$/Acre	\$ Market Value

Include the animals inventory,

So if you have 5 cows of 1,000lbs each, in weight you have to include 5,000.

\$ per unit include price per animal

Include all animal products that can be sold, 10 hogs.
In Measure include the unit included (lbs, each, hundredweight,



SUEGESTIONS

- Machinery = Declining balance
- Equipment = Straight-line
- Buildings = Straight-line
- Tools = Not depreciated
- Trees = ?



How to depreciate trees

- **How to Depreciate Trees:**

Depreciate based on establishment cost.

- **Example: Soursop trees (guanábana)**

The total is the cost to establish one acre of soursop trees, and it will be depreciated according to their useful life.



EXAMPLE

COST	TOTAL
Machinery	\$ 725.00
Labor	\$ 1,361.43
Materials	\$ 2,522.00
Total	\$ 4,608.43

- This is the cost of planting 118 trees per acre, you can depreciate this and include in the inventory, although FSA application gives a value per tree.



STEPS TO CREATE AN INVENTORY

- Determine the physical units that make up the farmer's property (detailed list of all possessions).
- Classify assets into current, intermediate, and fixed.
- Assign value.
- Determine all debts.
- Classify debts into current, intermediate, and fixed.
- Create inventory using suggested format.



For a new farm, it is advisable to update the inventory regularly, especially when equipment and tools are purchased.

EXAMPLES OF INVENTORY FORMATS FOR AGRI- BUSINESSES

INVENTORY OF CAPITAL ASSETS
NAME OF THE BUSINESS
ACCOUNTING PERIOD

DESCRIPTION	YEAR OF PURCHASE OR CONSTRUCTION YEAR	COST	USEFUL LIFE	RESIDUAL VALUE	ANNUAL DEPRECIATION	VALUE
LAND						
1.						
2.						
3.						
4.						
5.						
BUIDLNGS						
1.						
2.						
3.						
4.						
5						
EQUIPMENT AND MACHINERY						
1.						
2.						
3.						
4.						
5						
TOTAL						

Fuente: Administración de Fincas: Folleto Informativo, Libro de Cuentas para la Finca. Servicio de Extensión Agrícola

MATERIAL INVENTORY
NAME OF THE BUSINESS
ACCOUNTING PERIOD

MATERIALS	MEASURE UNIT	UNIT PRICE	BEGINING OF YEAR		END OF YEAR	
			AMOUNT	VALUE	AMOUNT	VALUE
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
TOTAL						

Fuente: Administración de Fincas: Folleto Informativo, Libro de Cuentas para la Finca. Servicio de Extensión Agrícola

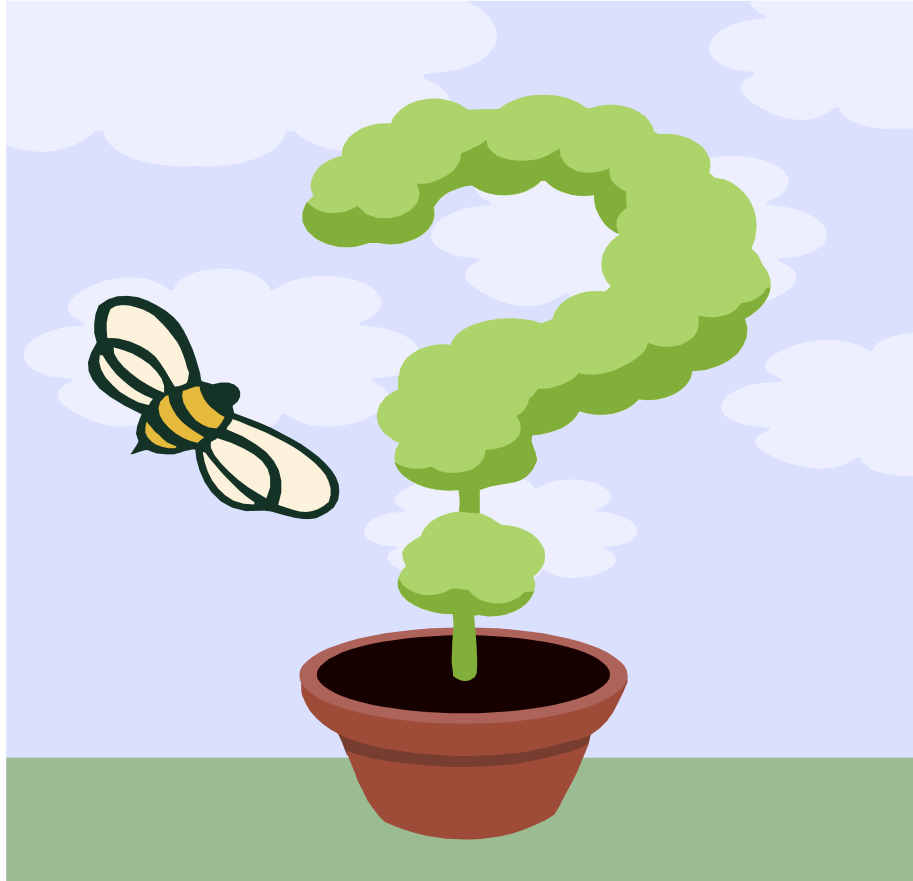
INVENTOY OF OTHER ASSETS
NAME OF THE BUSINESS
ACCOUNTING PERIOD

OTHER ASSETS	MEASURE UNIT	PRICE PER UNIT	BEGINING OF YEAR		END OF YEAR	
			AMOUNT	VALUE	AMOUNT	VALUE
Crops and animals to be sold in les tan 3 months						
1.						
2.						
3.						
4.						
5.						
Accounts recivable						
1.						
2.						
3.						
4.						
5.						
Others						
1.						
2.						
3.						
4.						
5.						
TOTAL						

Fuente: Administración de Fincas: Folleto Informativo, Libro de Cuentas para la Finca. Servicio de Extensión Agrícola

INVENTARIO DE DEUDAS
NOMBRE DE LA EMPRESA
FECHA DEL INVENTARIO

PASIVOS (DEUDAS)	ENTIDAD FINANCIERA	AÑOS/MESES POR PAGAR	BALANCE AL COMIENZO DE AÑO	BALANCE AL FINALIZAR EL AÑO
Corrientes (vencen en menos de un año)				
1.				
2.				
3.				
4.				
5.				
Total Pasivos Corrientes				
Intermedios (vencen de 1 a 10 años)				
1.				
2.				
3.				
4.				
5.				
Total Pasivos Intermedios				
Fijos (vencen en más de 10 años)				
1.				
2.				
3.				
4.				
5.				
Total Pasivos Fijos				
TOTAL				



Next time we will present Balance Sheet

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