NATIONAL OPEN UNIVERSITY OF NIGERIA

AEC 401

Farm Management Records Accounts

Module 1

Aec 401

Farm Management Records and Accounts

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Aec 401 Module 1

Farm Record Keeping

1.0 Introduction

Farm record keeping is a very important aspect of farm management. Farm record keeping involves putting down facts, data or information of the day-to-day activities of a farm. It can also be defined as a systematic documentation of various activities of the farm over a given period of time. A successful management of a farm requires an accurate up-to-date record. A complete farm record must include all daily activities and transactions and with a proper accounting system that have complete estimates of profit or loss statement of account all the end of years. It is important in to expose students studding Agricultural Economic an extension and others related courses in agriculture the rudiment of farm record keeping. This will complement the knowledge acquired in the class. To achieve this, field practical orientation is necessary.

2.0 Objectives

It is expected that at the end of the field practical that you should be able to:

- explain the meaning of farm record keeping
- identify the various types of farm records
- appreciate and understand why a farm should keep records
- identify the back information required for farm records.

3.0 Main Content

3.1 Types of Farm Records

Farm records and account can broadly be classified in to four types.

i. Inventory records

This is used to refer to a complete and comprehensive list of all assets and liabilities of the farm within a given time frame. Assets means all goods and services used for further production and owned by a farmer. Liabilities on the other hand mean goods and services the farmer owes to others.

ii. Production records

these are records of numbers of physical items (inputs) used for production and the total output obtained production records also include livestock records such as total number of feeds used, weight gains, eggs collected, death rote, birth and amounts of milk produced a among others. Labour input is also classified under production records labour input record is often recorded in terms of Monday or Man hour for every farm enterprise.

iii. Expenditure or in come Records: this takes into account all purchases and wages (expenditure) and sales (income). Expenditure and income records put together with production records usually farm the basis of daily management decisions.

iv. Special or Supplementary Records: these are records that are very important but cannot be categorized in to any of the above mentioned types of records. Farm map, soil map, and legal documents of the farm are typical examples of this type of records.

3.1 Why Do We Keep Farm Record?

Farm records are kept because:

- it is a measure of business success
- they guide in making farm production recommendations on the basis of cost and returns
- farm records are essential in making research on accounting procedure
- it is essential in resettlement scheme polities based on costs and returns of organization
- they guide in making marketing, pricing and development policies based on costs and returns obtained from farm records
- farm records are important for a good agricultural education policy.

3.2 Basic Information Required For Farm Records

Farm map: this indicates the record of location, size of farm, soil type, land use and possibly past soil treatment.

Labour: it record the type of labour used in the farm such as family labour, age grade, hired labour by age, sex, type of work done, time spent and number labourers engaged.

Supplies: All farm supplies such as seeds, cuttings, fertilizers among others are recorded in terms of types, source, cost, quantity, date, time and big field.

Output: record the total of number of units of crops harvested from a specific field in a particular day, condition of crop, number of units of crops harvested, weight

per unit, purpose of harvest among others. The threshing and shelling percentages of crops can also be determined and can be used to estimate the actual field per hectors of crops harvested in cobs.

Non-Farm Activities: this is essential in determining off farm income. It is essential to keep records of work done by family members on other farmers` farms by members, class and time worked, names of persons for whom work was done and wages received record work done on craft, trading and services by class and time worked with details of type of work done. Sales and marketing cost of farm produce: Record the type of farm produce sold, the name, condition, number units of produce sold, place of sale and income generated. The made, cost of transportation, distance sale outlet and place of sale should also be recorded.

Price: Farm produce sold at farm gate on daily basis in addition to the retail prices in local markets.

Land Tenure: the land tenure agreement by field, method and cost of acquisition as well as number years the land has been in use should be recorded.

Cropping pattern: type of crops or crop mixture as well as the crop rotation pattern should be recorded.

Conservation Rations: weight of items measured in local measuring units should be determined severally by taking several samples of each unit of measure and physically weighing them together with their contents. The average of the sample weights derived can then be used as proxy and conversion factors for unit of measure used.

4.0 Conclusion

It should be noted that farm record is essential for agricultural and economic development. Therefore teachers/facilitators of Agricultural Science student should ensure that:

-Students are exposed to practical aspects of agriculture at the end of the week/year of the practical year; students should be able to develop a farm record.

-Proper identification of the basic components of farm record is documented.

5.0 Practical Assignment

1. identify the basic components or information required for farm record.
2. identify the types of farm records in a farm.

3. make two design; one to take records of accounts a maize farm and a commercial pig farm.

6.0 References

A degeye, A.J. and Dittol, J.S (1985).Essentials of Agricultural economics.Impact Publishers Nig; Ltd; Ibadan.

Olukosi; J.O; and Erhabor P.O (1987). Introduction to farm management Economics: Principles and Applications.Agitab Publishers Ltd; Zaria.

Appendix 1.0

A typical design for record keeping in a maize Enterprise combination.

1. Machinery and Equipment use record Date Type of Operation Equipment used Total area covered Cost of service

(Slate whether hired)

2. Labour Record

Date or week Amount of Labour Total amount Wage Total cost hirelabour Total value

Hired Family of labour used Rate of family

LabourLabourlabour

Week 1

Week 2

Week 3

Week 4

3. Chemical Inputs Used Record

Date of Type of chemical Quantity Unit cost Total cost

Application (fertilizer, herbicites,

Insecticides or fungicides)

4. **Harvest Record**

Date quality harvested quality of crop after

(kg,bags or basket) drying and threating or milling

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5. Sales record

Date crop sold quantity unit price (N) total sales quantity out as gift

Note the amount of produce consumed by house hold is not usually and consciously accounted for but it can be calculated from harvest and sales records.

Concept of Book Keeping

1.0 Introduction

Book keeping is accounting aspect of farm management that involves the recording of transactions as they occur in a systematic way that shows the true and fair state of financial status a farm business at any given time frame. It is a record making aspect of farm accounting book keeping is just an aspect accounting form accounting involves design of accounting systems, preparation of financial statement, audits, cost studies, development of forecast, income text work, computer applications to accounting information that assist farm decision making processes.

2.0 Objectives

It is expected that at the end of the practical year you should be able to:

- explain the meaning of book keeping
- differentiate book keeping from accounting
- identify the various books used for book keeping.

3.0 Main Content

3.1 Book Keeping Books

Books used for book keeping are categorized into the following Sub-divisions:

1. Principal Books:
2. The ledger and cash book fall under this Sub-division. They are major books used for practicing accounting system.
3. Subsidiary Books: they are books of original entry, first entry or prime entry. These books are used to record many details before the amounts concerned are transferred to the account leger.
4. Statistical or memorandum book: these books are used to record details farm business operation that cannot conveniently be recorded in other books. Cost books, and stock books of manufacturing firm, the registers of shareholders in limited liability companies the policy registers of an insurance company among others are examples of operations then can recorded in statistical or memorandum books.

4.0 Conclusion

The concepts of book keeping, meaning of farm account and the various books used for book keeping was examined. It is expected therefore that the students are all the end of their practical year should have been exposed to the various books of used for book keeping and also knowing the concept of book keeping.

5.0 Practical Assignment

1. identify the types of books used for book keeping in FPY/SIWES Research Instituted /Organization or farm.
2. explain the meaning of book keeping and farm account.

6.0 References

Olofinlana, L.O. & Odeale R.W. (1999). Fundamental of Accounting Vol.1. Second Edition. Akure: Stecom Publishers Ltd. AkureOndo State, Nigeria

Financial Statement

1.0 Introduction

Financial statement is a formal was of putting in to record all financial transactions and positions of a farm, business or organization. In doing this, relevant financial information are presented in such a structured manner and farm that it will be easy to understand detail of all transactions should include in the financial state.

2.0 Objectives

At the end of the practical year, it is expected that you should be able to:

- state the meaning financial statement
- identify the different financial statement of accounts with aid the accounting clerk or accountant in the FPY/SIWES Research Institute/Organization or Farm.

3.0 Main Content

3.1 Types of Financial Statement

The basic types of financial statement typically include financial statements accompanied by a management discussion and analysis.

1. Statement of Financial Position or Balance Sheet: this shows clearly a business asset, liabilities and owners' equity at any given time.
2. Profit and loss (P and L) account or Revenue and expense account or income statement of comprehensive income: A business or company's income, expenses and profit over a given time frame is usually reported in this type financial statement. It shows at a chance data or information on the business enterprise. All sales and various expenses incurred within the stated period are stated here.
3. Statement of Retained earnings or statements of changes in equity or equity statement: All reports regarding changes in equity of a business enterprise are reported here.
4. A cash flow statement: this statement shows the business enterprise cash inflow and out flow and the services of finance slow the business enterprise

with be funded or sources of fund. It shows in detail particularly its operating, investing and financing activities.

5. Trading Account: Gross margin of a business enterprise is determined using this type of account gross margin is the difference between total income and total variable cost. Gross margin can also be seen as the enterprise contribution to fixed costs and profit after the variable costs have been paid. In calculating the gross margin the manager is expected to estimate best expected fields or production level for each enterprise and expected prices for the output.

4.0 Conclusion

The account clerk or accountant in SIWES Research/institute/Organization or Farm should ensure that the students understand the meaning of financial Statement and the various types of financial Statements. They should also be guided and exposed to how to prepare financial statements.

5.0 Practical Assignment

1. Explain the meaning of financial statements.
2. Identify the three (3) types of financial statement.

6.0 References

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Financial Ratios

1.0 Introduction

Financial ratios or accounting ratios are the terms used to financial the relative magnitude of two selected numerical values that are taken from business enterprise's organization's financial statement. Many financial ratios are often used in accounting to evaluate the overtake performance of the business or organization. The financial ratios show the relationships determine from a company's or organization's or business financial information and are used for comparison purposes. Financial ratios making ratios are one of most common tools of managerial decision making tools. A ratios is a comparison of one number to another-mathematically simple division problem. Progress and viability project, business or farm enterprise are measured using financial ratios.

2.0 Objectives

It is expected that at the end of the field practical, you should be able to:

- explain the meaning of financial ratios,
- identify the types of financial ratios and how to use it in analyzing the progress of the farm business enterprise they found themselves.

3.0 Main Content

3.1 Types of Financial Ratios

Financial ratios that of great importance in farm business management can be categorized into:

i. Liquidity ratios: Liquidity ratio measures the ability a company, business or organization to pay its current liabilities or obligations. Liquidity ratios can provide small business organization with useful information that will enable them regulate borrowing and spending. Some of the know liquidity rations include:

ii. Current Ratios: this measures the ability of a business enterprise to pay its near-term obligations. It is obtained dividing assets by current liabilities

Current ratio = $\frac{\text{Assets}}{\text{Current liabilities}}$

- Net Capital ratio: The capital ratio measures the credit worthiness of a business. It is usually calculated by dividing total assets by total liabilities.

Net Capital ratio = $\frac{\text{total assets}}{\text{Total liabilities}}$

- Quick or Acid Test Ratio: Shows the ability of a business to make payment on current obligations. The ratio should be 1:1. A higher ratio implies that the company or business may have more cash at hand or have a poor collection for accounts receivable. If otherwise, it implies that the company or business relies too much on inventory meets its obligations.

Quick or acid test ratio= $\frac{\text{cash}}{\text{Total assets}}$

Ash total Assets Ration: This measure the portion of the assets of a company or business enterprise held in cash or marketable securities. A higher ration tends to indicate some degree of safety the creditors point of view while excess amount of indicates in efficiency. It is calculated to by dividing cash by total assets.

Cash total ratio = $\frac{\text{Cash}}{\text{Total assets}}$

- Sales to Receivable or Turnover Ratio: The turnover ratio measures the annual turnover of accounts receivable. A higher ration indicates a short lapse of time between time of sales and cash collection. On the other hand a low ration means collection took time. Turnover ratio is calculated as thus.

Sales to receivable or turnover = $\frac{\text{Net sales}}{\text{Accounts receivable}}$

- Days' receivable ration: The days' receivable ration measures the average number of days' that accounts receivable are outstanding. This number is expected to be the or lower than the company's expressed credit terms. Other ratios such as cost of sales to payables ratio can be converted to days' receivables ration. Calculating days' receivable ration involves dividing the total number of days, in a year by sales to receivable.

Days' receivable ratio = $\frac{365}{\text{Sales receivable}}$

- Cost of Sales Payable: measures the annual turnover accounts payable. A lower ratio indicates efficiency or good performance. However, the ratio should be close to the business enterprise standard. This is calculated by dividing cost of

Sales to payable = $\frac{\text{cost of sales}}{\text{Trade payable}}$

= $\frac{\text{cost of sales}}{\text{Trade payable}}$

- Cash turnover Ratio: Cash turnover measures the ability of a business to finance the current operations, the efficiency of its capital employment and the margin of protection for its creditors. A high cash turnover ratio indicates the business is likely to be vulnerable to creditors. Low cash turnover on the other indicates inefficiency in the use of working capital. Generally, five to six times greater than working capital are required to maintain a positive cash flow and finance sales cash turnover ratio.

Current assets – Current liabilities

Ii Profitability or Return on Investment Ratio: This is measures the management efficiency in resources use. It provides information regarding the overall performance the management of the business. Some profitable ratio includes:

- Gross profitable: measures the margin of sales achieved by the business. It is used to show manufacturing or marketing efficiency.

Gross profitability = $\frac{\text{profits}}{\text{Net sales}}$

- Net profitability: Net profitability measures the overall profitability of the business it should effectiveness and efficiency of management with storing gross

portability combined weak net profitability indicates a problem with indirect operating expenses or non-operating items like interest expense. Net profitability is calculated by dividing net income by net sales.

$$\text{Net profitability} = \frac{\text{Net income}}{\text{Net sales}}$$

- Return on investment (ROI): shows how efficient the business is use of equity. Return on investment is considered as one of the best indicators of profitability. It is obtained by dividing net income by owner' equity i.e.

$$\text{Return on investment} = \frac{\text{Net income}}{\text{Owners' equity}}$$

- Earnings per share: This reveals the business profits per share. It is used as a tool for further comparison of the market price of the stock.

$$\text{Earnings per share} = \frac{\text{Net shares}}{\text{Net Assets}}$$

- Investment turnover: measures the efficiency of a business in the use of assets to obtain sales. A high figure obtained indicates efficient use of asset to obtain optimum or good sale while a low figure shows inefficiency in the use of assets to good sales. It is obtained.

$$\text{Investment turnover} = \frac{\text{Net sales}}{\text{Total Assets}}$$

- Sales per employee: This measure of productivity of each employee. A high figure indicates efficiency in personnel management or equipment: method of calculating sales per employee is stated as thus:

$$\text{Sale per employee} = \frac{\text{Total Sales}}{\text{Total number of employees}}$$

iii. Leverage Ratios: Leverage ratios measures the level to which a company or business depended on borrowing to finance its operations. Some of the major indices of leverage ratios include

- Debt to Equity Ratio: This shows the relative mix of the company's investor-supplied capital. A low debt to equity ratio indicates that the business enterprise is considered to be safer. This implies that there is a higher percentage of owner - supplied capital. Debt to equity ratio is calculated as thus:

$$\text{Debt to equity ratio} = \frac{\text{Debt}}{\text{Owners' equity}}$$

- Debt Ratio: This is used to measure the portion of the business capital that is provided by borrowing. A debt ratio that is greater than 1.0 indicates the business has a negative net worth. This also shows that the business is technically bankrupt. Debt ratio is derived as

$$\text{Debt ratio} = \frac{\text{Debt}}{\text{Total Assets}}$$

- Fixed to Worth Ratio: This measures the amounts of the owner's equity invested in fixed assets. It is derived by dividing net assets by tangible net worth. Symbolically it is stated as thus:

$$\text{Fixed to worth ratio} = \frac{\text{Net fixed assets}}{\text{Tangible net worth}}$$

- Interest Coverage: Measures how comfortable a business enterprise can handle its interest payment. It is represented as thus:

$$\text{Interest Coverage} = \frac{\text{Earnings before interest and tax}}{\text{Interests' expense}}$$

iv. Efficiency Ratios: This used to determine how efficient a business enterprise is in terms of credit use and purchasing efforts. The following are some of the main indicators of efficiency:

- Annual Inventory Turnover: It measures the efficiency of the business in managing its production, warehousing and distribution of products in relation to the volume of sales. Higher ratios over six or seven times a year is generally considered to be better. However extremely high inventory turnover may indicate a narrow selection and possible loss of sales. On the other hand, a low

inventory turnover indicates that the business is paying to keep a large inventory and may be over stocking or carrying obsolete items. The derivation of annual inventory turnover is stated as

$$\text{Annual inventory turnover} = \frac{\text{Cost of goods sold for the year}}{\text{Average inventory}}$$

- Inventory Holding Period: This is a measure that is used to calculate the number of days, on average that elapse between finished goods produced and sale of product. This inventory holding turnover is obtained as:

$$\text{Inventory Holding Period} = \frac{\text{No of days per year (365)}}{\text{Annual inventory turnover}}$$

- Inventory to Assets Ratio: This is obtained by dividing the inventory by total assets. Inventory to assets ratio is used to show the portion of assets tied up by inventory. A lower ratio is considered to be better. Symbolically, it is represented as:

$$\text{Inventory to assets ratio} = \frac{\text{Inventory}}{\text{Total assets}}$$

- Accounts Receivable Turnover: This is a measure that is used to show how quickly credit sales turned into cash. The reciprocal of this ratio shows the outstanding portion of a year's credit sales at any point in time. Accounts receivable turnover is derived as:

$$\text{Account receivable turnover} = \frac{\text{Net (credit) sales}}{\text{Average account receivable}}$$

- Collection Period: Collection period measures the number of days the business enterprise receivables is outstanding between the date of credit sale and collection of cash. It is obtained as:

$$\text{Collection Period} = \frac{\text{Number of days per year (365)}}{\text{Accounts Receivable Turnover}}$$

4.0 Conclusion

All financial ratios can simply be derived by comparing figures that appears on business income statement and balance sheet. Business owners can be well equipped by familiarizing themselves with ratios and their uses as a means of monitoring or checking anticipated changes in the operations of the business. Thus financial ratios are veritable tools for measuring. At the end of the practical year, the students should be able to understand the concept of financial ratio and be able to identify the various ratios.

Farm Planning

1.0 Introduction

Farm planning is a process that involves allocation of scarce resources of the farm in such a way or forms that resource use and income efficiency is achieved. It is also regarded as the decision making process of deciding in present time for the future of the rational use or combination of input that or resource to achieve maximum output. This process involves make choice or choosing from the available scarce resource. It is also concerned with the various adjustments the farmer makes among the existing enterprise that will give maximum output. Farm planning is aimed or profit and income maximization that will be sustained over a long period of time, maximization of net income through efficient use of resource planning and most importantly is increase in the standard of the living of the farmer.

2.0 Objectives

It is expected that by the end of the practical year, you should be able to:

- state the meaning and objectives of farm planning,
- explain the importance of farm planning
- identify farm planning procedure or steps.

3.0 Main Content

3.1 Importance of Farm Planning

1. Farm planning is an important component of farm management as it enables the farmer to achieve to achieve the farming objectives in relation to the farm and family in a more organized way.

2. It ensures a careful examination of the existing resources and efficient allocation of resources.

3. With farm planning, the farmer is able to take decision with respect to the enterprise and/or enterprise combination to go into and be maintained.

4. Farm planning enables the farmer to know the best combination of input to be used with a view to achieving maximum output, i.e. input output relationship.

5. It helps the farmer to select the best alternative among the existing scare resources.
6. It assists the farmer to identify the input and credit need of the farm.
7. Future costs and returns can be determined using farm planning.

Steps are required in preparing: The general farm layout number and shape topography, soil type, farm structure, and irrigation can be indicated in the farm map.

- Recording the History of the Farm: It is essential to obtain data or information regarding resources used and their efficiency the crop rotation system the adopted previously should be known. On the basis of this information, planning with respect to crops to be grown, crop rotations to be followed credit requirements and sources will be possible.
- Planning Bullock and Human Labour Requirements: A calendar of farm operations should be prepared and bullock and human labour requirement should be determined for different months. A labour requirement so plan should developed in other to guide a farmer to analysis labour requirements with respect its availability.
- Planning the land use and soil conservation practices: Having obtained full information on resources and the analysis, It is important to adopt practices that will ensure efficient use of land. While planning cropping programme, attention should be given to cropping and crop management plan that will enhance soil conservation.
- Planning livestock Programme: Livestock and crop production are supplementary enterprise. The farming system should be planned encourage the production of forages and fodder crops throughout the year to maintain the animal.
- Planning the marketing of produce: The study market forces and conditions are essential components of farm planning.

4.0 Practical Assignment

1. As a FPY/SIWES Student, discuss the meaning of financial ration.
2. Identify the different types of financial records in your FPY/SIWES.
3. Using the available records in your FPY/SIWES, Research Institute organization or farm, identify assets and liabilities and prepare a net capital ratio.

5.0 References

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Taulli, Tom (2004). Online Guide to Decoding Financial Statement. J. Ross Publishing.

Farm Budgeting

1.0 Introduction

A farm budget entails listing of all estimated income and expenses associated with a particular farm enterprise in such a way that it provides an estimate of its profitability. Budgeting can also be defined as the detailed quantitative statement of a farm plan or a change in farm plan and the forecast of its financial result. It is a detailed physical and financial plan of farm operations for a given period of time. There are two basic forms of farm budget – complete or total budget and partial budget. Complete budgeting is done when there is need for total reorganization the business. It is also carried out by a new farmer who is just starting a farm or when there is a change in technology and method of production or increase in farm size or when other production variables outmodes the existing farm organization. A partial budget is used to calculate the expected change in profit for a proposed change in farm enterprise. It comprises of only those income and expense items that are likely to change if the proposed modification in the farm is implemented. It shows only changes in income and expenses and not total value.

2.0 Objectives

At the end of the practical year, it is expected that you should be able to:

- explain the basic concept of farm budget
- discuss the advantages of farm budget
- mention pre-requisites for farm budgeting
- explain steps in farm budgeting and
- methods of budgeting.

3.0 Main Content

3.1 Advantages

1. It is used to select most wisely the factors of production.
2. Budgeting enables the farm manager to think more accurately, make careful and complete plan.
3. Farm budget acts as money saver as it is cheaper and easier to make mistakes on paper than in practice.

4. It is an excellent means for students to know how to organize and reorganize farms.
5. Budgeting enables farm manager to determine when to borrow and how much to borrow.

Preparing a farm budget requires that:

1. objectives are stated and list of all the available resources are drawn,
2. cropped land size and number of livestock are estimated,
3. estimating physical inputs and outputs,
4. factors and product prices are estimated,
5. the manager execute the best plan be made,
6. decision on the best possible plan be made,
7. possible alternative plans are compared on the basis of the gross margin per unit of the most limiting resources.

If a meaningful plan is to be produced, certain steps should be followed in preparing a farm budget. These steps include:

1. Farming goals and farmers preference must be determined.
2. Making the list of farm resources available to the farmer.
3. Determine the resources that are currently in use.
4. List the gross production.
5. Prepare an income and expenditure statement on the basis of current utilization of farm resources.
6. Input – output relationships should be analyzed.
7. Compare the standard attained with those of other farm around the area.
8. Analyze the general weakness.
9. Prepare a number of alternative farm plans and choose the best alternative plan of action to be adopted.
10. Determine priorities in correcting the structural and operational weakness.
11. Supervise the implementation of programme under the plan.
12. Evaluate the results.

4.0 Conclusion

The concept of farm budgeting, advantages, pre-requisites for farm budgeting and steps in farm budgeting was examined. It is therefore expected that at the end of the practical year, the students should have been able to explain the meaning of farm budgeting and its usefulness as well as the steps involved in farm budgeting and the conditions necessary to prepare farm budget.

5.0 Practical Assignment

1. Identify the various steps involved in farm budgeting.

2. Suggest the meaning of farm budgeting.

6.0 References

Adegeye, A.J. and Dittoh (1985). Essentials of Agricultural Economics. Ibadan: Impact Publishers Nig. LTD.

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Farm Labour Management

1.0 Introduction

Labour is human efforts of all kinds used for further production. It includes mental and physical effort of farmers, farm families and labourers. Human labour could be in form of manual, mental, skilled or unskilled, scientific or artistic labour and it is categorized into: family labour, hired labour and exchange labour. The most common form of labour in agricultural production is family labour. Family labour is popular because it is almost cost free and / or it reduces cost of production. Components of family labour include labour of all parents and children in a household who are involved agricultural production.

2.0 Objectives

By the end of the practical year, it is expected that you should be able to:

- explain the meaning, types and components of labour
- state the characteristics of agricultural labour
- demonstrate the methods and procedures for measuring labour efficiency
- suggest ways to improve labour efficiency.

3.0 Main Content

3.1 Characteristics of Agricultural Labour

1. Labour is mobile. Labour mobility could either be geographical or occupational.
2. Full-time labour is also a "lumpy" or indivisible input. This implies that it is available only a whole or indivisible.
3. Consent of labour is required before use. This however is not applicable to slavery labour.
4. Labour as required to co-ordinate other factors of production.
5. Labour lost cannot be regained.
6. Supply curve for labour is abnormal. It is backward bending.
7. Reward for labour is wages.

3.2 Measures and Procedures for Measuring Labour Efficiency

Labour efficiency measures convert some physical, cost or income total into a value per person-year. The commonly used measures are:

1. Value of farm production per person: This is used to measure the total value of agricultural products per person per year. It is derived by dividing the value of

farm production by the person year equivalent. This type of labour efficiency is usually affected by business size, enterprise type, amount of machinery and other labour serving equipment used.

2. Labour cost per tillable area: it is derived by dividing the total cost per year by the number of tillable or rotated areas. The opportunity cost of operator and family labour is included in total labour cost.

3. Tillable Areas per person: This is derived by dividing the total number of tillable or rotated area in the business by the person – year's equivalent gives tillable area per person.

4. Work units per person: Work unit per person is obtained by dividing total work unit required by the number of person – year. Symbolically it is represented as:

$$\text{Work units per person} = \frac{\text{total work units required}}{\text{Number of person-year}}$$

The farm manager should adopt the following means to increase efficiency.

- Organizing the field after giving full thoughts, choosing the right man for the right job, keeping records of the jobs needed to be performed on the farm.
- Supervising the work performance, giving instructions and demonstrating to them by him/her doing it, boosting the spirit of labour force by reminding them of their commitments, a word in appreciation of good work done by them.
- Certain perks and privileges should be provided like housing, medical, recreational facilities. If afforded children's education.

4.0 Conclusion

It should be noted that labour is an important resource in agricultural production. Its management is essential in boosting the efficiency of other factors of production. Teachers/facilitators of agricultural science students should ensure that:

- Students should know and demonstrate the procedures for measuring labour efficiency
- Students are able to identify the ways of improving labour efficiency and
- Also identify the characteristics of agricultural labour.

5.0 Practical Assignment

1. Identify the procedures for measuring labour efficiency.
2. Suggest ways of agricultural labour efficiency.

6.0 References

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Feasibilty Studies and Report Preparation

1.0 Introduction

A feasibility study is analysis of how successful a project can be completed giving into considerations certain technological, economic, legal and scheduling variables that may affect the project. Feasibility study is also regarded as an assessment of the practicality of proposed project or system. It is important in determining the viability of a proposed project to ensure that the project is legally, economically and technically feasible and justified. Feasibility study is also used in developing strategies that will help to convince a bank or investor that the business is profitable to go into a well-developed feasibility study will identify all variables required to ensure the success of any business. Developing a feasibility report will serve as a solid foundation for making business plan. It also helps to pinpoint logistical and other business related problems and solutions.

Feasibility study contains comprehensive detailed information about the project structure, the products and services, market, logistics of how a product or service will be delivered and required resources needed for the project to be efficient.

2.0 Objectives

It is expected that at end of the field practical you should be able to:

- state the meaning and importance of feasibility study
- mention how to prepare feasibility study and report
- identify the components of a feasibility study.

3.0 Main Content

3.1 Components of a Feasibility Study

1. Description of the business: Products or services to be offered or introduced should be described.
2. Market feasibility: This is aimed at assessing the sales potentials of a proposed product or project. It shows details of the project, the current market, anticipated future market potential, competition, sales projection and potential buyers.
3. Technical feasibility: This shows in details how the product or services will be delivered including other variables such as materials, labour, transportation, required technology and where the project is to be located to achieve the management objectives.

4. Organizational feasibility: Clearly define the legal and cooperate structure of the project or business. Professional background information with respect to the founders and the necessary skill to be contributed may be required.
5. Conclusions: Discuss how the business can succeed. In preparing a feasibility study, it is important to be as honest as possible in your assessment. This is so because investors will not only look at your conclusion but will also question the conclusion if it appears unrealistic.

4.0 Conclusion

The meaning and importance feasibility study was explained. How to prepare feasibility study and report as well as the components of feasibility study was also examined. It is expected that students at the end of their practical year should have acquired the technicalities involved in preparing feasibility study and report. It is also expected that the students should have been able to know how to prepare a feasibility study report and identify the components of feasibility study.

5.0 Practical Assignment

1. Identify the various components of feasibility study report.
2. Prepare a feasibility study for establishing a fish farm in your area.

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Farm Survey

1.0 Introduction

Farm surveying is the act of measuring and mapping the position, height, size and boundary of an area of area land. It shows clearly all the physical structure on the farm land. In general, farm surveying is the process of measuring relative position of natural and man-made features on the earth surface and plotting of these measurements to some suitable scales for the produce a map, plan or section.

2.0 Objectives

It is expected that at the end of the field practical year, you should be able to:

- state the meaning and the importance of farm survey and identify farm
- use survey equipment.

3.0 Main Content

3.1 Importance of Farm Survey

1. It helps to know the size or hectare of a farmstead and the arrangement of land for proper usage with the risk of land degradation.
2. Farm survey is used to know the available resources and to project the maximum profit achieved.
3. Results obtained from farm survey can be used as collateral for security loan for financial institutions.
4. It is used to determine the absolute and relative position of points on the farm and earth`s surface.
5. Farm survey is essential in determining the topography or gradient of the farm land.
6. It helps the farmer to map out the farm into plots.
7. Land owners feel more secured with a survey report.

3.2 Elementary Instruments Used Measuring Distance In Farm Survey

1. Chain and tape: Chains or tapes are mostly used to measure distances on the field. The chain is made up of connected steel segments or links that measure

up to 20cm. sometimes, a special joint or a tally maker is attached in every 5m. Usually a chain has a total length of 20cm including the handle at each end. Measuring tapes on the other hand are made up of steel, coated linen, or synthetic material. They are available in 20m, 30m and 50m. Centimeters, decimeters and meters are usually indicated on the tape.

2. Measuring Rod: These are lengths ranging from 2m to 5m. They are usually marked like measuring tape showing centimeters, decimeters and meters.

3. Plumb Bob: Plumb bob is used to verify if objects are vertical. It is made up of a piece of metal (called a bob) pointing down wards and attached to a cord. When the plumb bob is stable, the cord is vertical.

4. Carpenter level: This is used to ascertain if objects are horizontal or vertical. The carpenter level has one or more curved glass tubes called level tubes. The tubes are sealed and are partially filled with liquid (water, oil or paraffin) while the removing part is made up of air that are visible as bubble. There are usually two marks on the glass tube. The air bubbles are usually between the two marks when the carpenter level is either horizontal or vertical.

5. Ranging Poles: These are made up of either wood or metal. They are usually straight poles of about 3 to 4cm in diameter and about 1 to 2m long. Ranging poles are used to mark areas and set out straight lines on the field. They are also used to mark points that must be seen from a distance is which case a flag must be attached. So as to improve visibility. Ranging Poles are usually with attempt rod white or black white bands.

6. Pegs: Pegs are made up of woods with properly sharpened or pointed end. The size of pegs ranges from 40cm to 60cm. The pegs are driven vertically into the soil such that the top are clearly visible. Pegs are used when certain points on the field require more permanent marking.

3.3 Farm Surveying Equipment

1. Prismatic Compass: Is usually placed on a stand with a prism and a compass card marked in degrees, half degrees, minutes and seconds in a clockwise direction. It is used in taking bearing and measuring angular distances.
2. Theodolite: This has tripod stand made of wood or a light weight with solid or telescope legs with a lower plate that contains the graduated horizontal circle made of glass or brass with a spirit level. It is used to determine or define horizontal plain against which angles of elevation or depression are measured. Theodolite is used to measure horizontal or vertical angles or planes.

3. Gunter's chain: It is made up of series of dumb bell shaped links of steel wires that are joined together by three small rings of 20.13mm in length divided into 100links of 19.8cm each with a brass handle on either side and it is generally metallic. Gunter's chain is used to take short or detailed measurement of length and breadth.
4. Beacon or piller: It is made up of rectangular block in form of concrete with marks inscribed on the top of the block and always buried in the ground with the marked head raised above the ground. It is used for marking off points measured and recognition of the measured or surveyed area.
5. Arrow and Pins: They are used during chaining to mark off chain lengths as measured and also for making survey stations. Arrows and Pins are tin pointed steal wires of about 30cm long with one end curved into a ring. Usually, a red cloth is often attached to the ring to aid vision from afar.

3.4 General Maintenance Of Surveying Instruments

All instruments must be cleaned after use.

- Instruments must be kept in a dry and cool place
- Metals parts should be oiled or greased or pointed before they are kept for a long period.
- Instruments must be kept away from heat or rain to avoid damage or rusting.
- Worn-out parts must be replaced.
- Instruments must only be used for the intended functions.
- Competent surveyor should handle and use instrument only as may be directed.

4.0 Conclusion

The meaning and importance of farm survey was explicitly explained. Also discussed include farm survey tools and equipment and ways of maintaining farm survey instruments. At the end of the practical year, the students are expected to be able to identify the both the elementary survey instruments and the survey equipment and how to use, handle and maintain them.

5.0 Practical Assignment

- Identify the various survey instruments.
- Suggest how these instruments can be kept in good conditions.

Spreadsheet and Data Encoding

1.0 Introduction

A spreadsheet is defined as computer application or programme that enables individuals to tabulate and collate data. Data collated can be used to make calculations, make graphical representations and other analysis. Spreadsheet is used for analyzing, organizing, storing of data in tabular form. A spreadsheet specifically is a sheet of paper that is used to show accounting or other data in rows and columns. Basically, spreadsheet is used to create budget, make graphs and charts and for storing and sorting information.

2.0 Objectives

It is expected that at the end of the field practical year, you should be able to:

- explain the meaning of spreadsheet
- identify the components and basic feature of spreadsheet programme
- identify types and examples of spreadsheet programmes
- define data encoding

3.0 Main Content

3.1 Components and Basic Features of Encoding

- A spreadsheet is made up of the grid of cells that are arranged in rows and columns to enable information or data to be coded into each cell
- Each cell is made of text, numbers and formula
- A formula is a calculation based from the contents of the cells or a total of a combination of cells
- It can be useful at home for making budgets and account that makes it easy to display information
- Spreadsheet is composed of series of different worksheets which can accept different data and also enhance cells on one worksheet to be used and referenced on the other worksheet
- Data can also be sorted and filtered by a spreadsheet
- Microsoft office spreadsheet is also known as excel however there are open office spreadsheets available like internet based web apps such as Google spreadsheet.

- A number of tools are included in a spreadsheet to support different types of calculations and graphical representations such as graphs, pie charts, etc.

3.2 Basic Features of Spreadsheet Programme

- **Grids, rows and columns:** A spreadsheet is made up of a grid of columns and rows.
- **Functions:** These are used in the spreadsheet software to evaluate values and perform various kinds of operations.
- **Formulas:** The spreadsheet software consist of formulas that are used to express the relationship of two or more cells.
- **Commands:** These provide different types of command for value manipulation.
- **Printing:** This is used to get a hardcopy of already prepared spreadsheets.

3.3 Types of Spreadsheet

The types of spreadsheets include:

- Simple (or gray cell) tables introduced in excel 2.0.
- Excel tables, introduced in excel 2007.
- Pivot tables with a tabular report layout introduced in excel 2010.

Some examples of spreadsheet programmes include

- Google sheets (online or free)
- Work numbers – Apple office suite
- Libre office – Calc (free)
- Lotus symphony – Spreadsheets
- Microsoft office calc (free)
- Viscalc (discontinued)

3.4 Data Encoding

This is the way in which data are converted into a format required for various information needs. This process includes programme compiling and execution, data transmission, storage and compression / decompression. It also involves the use of a code to change original data into a form that may be used by an external process. Data encoding is also used to reduce size of audio and video files. The audio and video files are formatted with a corresponding coder-decodes (code) programme

used to code into the appropriate and then decode to play back. Type of code used for converting character is known as American Standard Code for Information.

4.0 Conclusion

The concept of spreadsheet and encoding was examined. Also examined were the basic types, examples, components and basic features of spreadsheet programmes. It is expected therefore that at the end of the practical year, the student should be exposed the concept of spreadsheet and encoding. It is also expected that students should be able to know how to encode data and prepare a spreadsheet.

5.0 Practical Assignment

i. Suggest the meaning of spreadsheet and data encoding