



Building Local Networks for Integrated Agribusiness Development

Learning Module Series

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Module 6: Economic analysis and crop budgeting

Foreword

Why should we make an economic analysis of our projects and businesses? According to Vishvanath¹, doing an economic analysis will allow us to allocate resources in a way that we can get higher incomes that we can then use for investment or consumption. Economic analysis is a tool that can help us choose the most efficient way to produce and market something; that is, to use the least resources for a given output. All resource inputs and outputs have an 'opportunity cost' through which the extent and value of business items are estimated. Businesses should therefore be chosen where the resources will be used most efficiently and effectively.

This module aims to equip coaches of BSS and other actors of the ABCs with the basic analytical skills to choose the options or enterprises that lead to the most efficient allocation of resources and the greatest desired output, thus either enhancing incomes for investment or consumption, or achieving any other set goals.

Although this topic is vast, this module has had to be limited to the basic economic theories that are adapted to practical forms that can easily be practised by the actors we are targeting. This module therefore needs to be considered as an intermediary step, to be followed up by capacity strengthening activities adapted to the precise and locally relevant questions and challenges at cluster levels.

About this module

Learning objectives

At the end of the module/workshop, the participants will be able to:

- Identify the basic universal questions facing every business entity and to find suitable answers to address these questions
- Understand and appreciate the processes and procedures for undertaking economic analysis
- Identify the various classes of resources required by agribusinesses and how to manage them for optimum output
- Take an inventory of business resources and keep proper records of them
- Use basic economic analytical tools (budget, gross margin, cash flow and profitability) to assess the performances of businesses

Proposed outline of the sessions

Following the general introduction, the module proposes 8 sessions in a workshop to successively explore the different aspects of economic analysis. It includes both theoretical

¹ Guidelines for the Economic Analysis of Projects, Economics and Development Resource Centre, 1997
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background and practical exercises. These can be adapted to your context. Please note that the time indications are also not set in stone. Depending on the context, it might take more or less time.

Session 1 aims at making the participants aware that economic analyses are done by every rational business person. In the case of ABCs, most people do this, unknowingly, all the time. Participants will carry out an exercise to demonstrate how this is done to find suitable answers to universal economic questions. Session 2 is in two parts and first presents the basic understanding of economic principles and how they can be applied in the managerial aspects of businesses. Session 3 deals with information gathering and keeping records and how important they are in decision-making that affects the prospects of the business. Session 4 focuses on how to use one of the important economic analysis tools, activity budget and cash flow, to economically analyse agribusiness from production, through processing to the marketing stages. Session 5 relates how to identify income or revenue accruing to agribusiness as well as costs that need to be incurred (variable and Fixed) in achieving the revenue. This session also considers cash flow planning. Session 6 is on the use of two other economic analysis tools, namely Gross Margin and Profitability analysis to assess the profits and sustainability of the business. Finally Session 7 aims at preparing the field work; how to make some of the concepts and tools introduced to participants practical for using at the cluster levels in the field.

Session title	Session activities	Time involved
Session 0: Introduction	Plenary round: Introductions & Expectations	½ a day
Session 1: Sensitisation on economic questions	Group Exercise 1: Economic challenges of a case With plenary discussion	
Session 2: From economics to management	Plenary discussion Group Exercise 2 (in 2 parts): Identification and classification of productive resources Plenary brainstorm Group Exercise 3: Going through the decision-making process	About 4-5 hours
Session 3: The building blocks (Record-keeping)	Plenary brainstorm Plenary exercise and discussion Plenary discussion (2x) Buzz groups & checklist Group Exercise 4: Completing the record form Plenary discussion and concluding remarks	About 4-5 hours
Session 4: Introducing two economic analysis tools: Business activity budgeting and Cash flow	Plenary checklist Plenary lecture by facilitator Group Exercise 5: Practising budget preparation Plenary presentations and discussion Plenary brainstorm followed by Facilitator lecture	About 4 hours
Session 5: Income/Revenue versus Cost (Variable/Fixed)	Plenary brainstorm (2x) Plenary facilitator lecture Plenary exercise	About 2-3 hours

MODULE 6

Economic Analysis and Crop Budgeting

Session 6: Analysing profitability of the enterprise (Gross margin and Profitability analysis)	Plenary brainstorm Plenary facilitator lecture Plenary brainstorm Group Exercise 6 (in 2 parts) : Preparing the financial statement, computing gross margin and net profit, and determining the breakeven point Plenary presentations, discussion and exercise Plenary brainstorm Plenary discussion	About 5 hours
Session 7: Preparation and ToR for field work	Plenary brainstorm Plenary facilitator lecture Plenary tips Individual work	About 3-4 hours
Session 8: Module/Workshop assessment	Different exercises/ formats for making assessment of workshop	About 1 hour

Session 0: Introduction

Introduction

The length of this introductory session depends on whether the participants and facilitators have already worked together or not. If they have, there is no need for an elaborate introduction. However, if they have not worked together before, we suggest some exercises in order to get to know one another better.

Learning objectives

This session introduces the participants to one another, sets the foundation for the workshop programme, and gives a first introduction to the video that will be referred to throughout the module.

Procedure

List of tools/equipment required

- Flip chart, markers
- Coloured cards for expectations
- Sticky tack, pins or tape – depending on the location

- 1. Plenary introduction:** Welcome the participants, and if they do not know each other, come up with an introductory exercise. Then provide information on any outstanding accommodation issues, the workshop program, tools, directions, etc. Vary the methods by doing brainstorms, asking participants to fill in cards, etc. Be sure to cover the following items:
 - A general introduction on the importance of this topic
 - Ask participants about their expectations and concerns (on cards and hang up)
 - An explanation of the learning objectives and the workshop program
 - Agreement on basic procedures to be followed in the workshop, i.e. on the do's and don'ts. Ask participants to list them on flip charts and stick them on the wall for the duration of the workshop.
- 2. Reflection Diary:** Introduce the idea of keeping a reflection diary in which each participant writes down his/her reflections of the day using a standard format, indicating what was done, interesting, important and applicable (see general introduction; Annex 1).

Session 1: Sensitisation on economic questions

Introduction

Farmers and other actors engaged in agricultural activities are continually exposed to changes that compel them to adjust their operations to increase profitability and competitiveness. These changes stem from the market, the development of new technologies, and policy shifts both at the national and international levels. These changes impact greatly on the type of enterprises they develop, the quantity of inputs and supplies required, and the method and destination for their products. Because of the complexities involved, good management skills are needed by people involved in agribusiness, to be able to respond to these changes.

This session starts with an examination of the decision-making process agribusiness practitioners can follow and concludes with a number of practical answers that can be provided to the nagging questions facing them.

Learning objectives

At the end of this session, the participants will be able to:

- Understand economic challenges confronting agribusinesses, especially the three main problems of 'What to produce', 'How to produce' and 'For whom to produce'
- Find out how agribusinesses can deal with challenges to the main economic questions
- Clarify the main challenges within the clusters that the coaches are supporting

Procedures

List of tools/equipment required

- Cards (2 colours), markers
- Tape – or Pins and a Pin board
- Flip chart sheets

1. **Plenary introduction:** Shortly introduce the objectives of the session. Then introduce participants to **Exercise 1** to brainstorm to identify the main economic challenges that face producers, processors and marketers.
2. **Group exercise:** Ask participants to work in groups to read the story and questions in Exercise 1, which introduces the case story of 'Maize Farmers in *Nowherecool* Community'.
3. **Plenary discussion:** Discuss the responses to the four questions one by one, by asking different groups to present what their came up with. Ensure that the discussion relates to key aspects of economic challenges/ questions of what to produce, how to produce, and for whom to produce, facing the various actors.

Advice for the facilitator to orient the discussion based on Exercise 1

(About Economic Challenges)

- Let the participants understand that economics includes the identification of basic economic challenges before any society or business can even make any attempt to solve them.
- Ask the participants to try to mention any of the broad economic challenges. Note what they say on a flip chart.
- Then draw their attention to the general economic challenges facing every society worldwide, e.g. increasing human wants, limited availability of resources to satisfy these wants, and how to fulfil these wants with limited resources.

After leading the participants to find answers to the key economic questions in the passage, continue by allowing them to relate the situation to their own cluster as follows:

- **What should we produce / diversify?** (Looking specifically at the Goods and services required by the society for consumption –
- Ask them to think about the various agricultural commodities already produced and processed in the areas where their ABCs are located. E.g. Consider one crop and think about all the different ways this is processes/sold/marketed?
 - o Ask them why the cluster actors decided to settle on the value chain as they did.
 - o Note the various reasons they may note down on a flip chart and keep it pasted somewhere.

It will become obvious to refer to some of the answers given during the course of other discussions.

- **How much should we produce?** (Looking specifically at the production technologies available).
 - o Ask the participants whether they can tell the average yield (bags, tonnes, litres etc.) of production per acre/hectare of their cluster members and the total volume of output (bags, tonnes etc.) the entire cluster is able to raise within a time period, e.g. annually?
 - o Ask them if they know the yield obtained from other places where the same commodity is produced.
 - o Find out if there are differences in yield at the two producing areas and what they think is contributing to the difference?
- **For whom to produce?** (Looking specifically at the manner in which goods and services produced are distributed and utilised to satisfy human needs)
 - o Can participants identify the users/consumers of their products, i.e. the market?
 - o Can they tell where these users/consumers are located?
 - o Are they aware of the final form in which the products are changed to before they are used?
 - o Do they know how the transformations of the goods are made?
 - o Do they know how the goods they produced get to the final consumer?
 - o Do they know whether the users of the goods they produce are happy with the products they get from them?
 - o What about the producers themselves, are they happy with what they realise from their business and are they encouraged to go on with production?

Let the participants know that getting satisfying answers to these questions will mean that the limited resources are used to satisfy unlimited wants economically. In discussing the topic, references can be

4. **Conclusion:** Ask participants to write 1 word per card to express what they have learnt and how they can apply it at their cluster level. Use two coloured cards: one colour for what they have learnt and the other on how they can apply this in the field. Post the cards on the pin board or wall, grouping and classifying them under 'What I have learnt' and 'how I can apply it'.

Additional reading

- Reference sheet M6/1: From Economics to Management

Session 2: From Economics to Management

Introduction

Due to limited resources, businesses including agribusiness firms need to make the best use of the economic resources available to them, particularly to maximise outputs (yields), sales revenue, and profit. Hence, managers of different business firms need to make prudent decisions regarding the production, processing, type of product mix, choice of inputs, and the prices they pay in purchasing them, product prices they receive, etc.

Since the future is always uncertain, decision-making for the future progress of the business firm is really difficult. Therefore, managers who have to make decisions regarding the use of resources have to be equipped with knowledge and skills in Managerial economics, to make this task a bit easier and more systematic. This is where the principles of economics and methodologies are applied to the decision-making process within the firm or organisation.

Learning objectives

At the end of this session the participants will be able to:

- Understand economics in its practical sense.
- Identify the various resources required in agribusiness and their classifications.
- Apply the 'scarcity' and 'opportunity cost' concepts to resource use.
- Appreciate the need for good management of productive resources using the available management tools and techniques.
- Understand the decision-making process in economics and how it can be applied to agribusiness.
- Appreciate the benefits of good management.

Procedure

List of tools/equipment required

- Cards, markers
- Tape – or Pins and a Pin board
- Flip chart sheets

Step 1: Understanding Economics in its Practical Sense

1. **Plenary exchange:** Ask the participants to write on cards their understanding of economics. In other words: *how they define economics*.
 - Read the cards out loud and paste them on the board or wall.
 - Note and write the key words that denote key concepts of economics on the flip sheet (may include: wants needs, limited resources, opportunity cost, economics as a science, wealth, income, choice, alternative use of resources, etc.).
2. **Continue in plenary:** Ask the participants to find economic meaning in the words mentioned and to explain why they are used in economic analysis.
Proceed to give a definition of Economics that suits the context of agribusiness for

the ABCs (the definition of Professor Lionel Robbins: ‘Economics is a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses’).

Advice for the facilitator to orient the discussion on how to define economics so that it does not look abstract to the participants but rather enhances the practicality of it.

- Let the participant understand that several authorities have different definitions based on various ideologies that have evolved from time to time over the years. Mention some of the broadly accepted definitions from people such as; Adam Smith, Alfred Marshall and Samuelson.
- Present the definition of Professor Robbins and explain that it is found suitable for our situation for the following reasons):
 1. **Human wants are unlimited:** The scarcity definition of Economics states that human wants are unlimited. If one want is satisfied, another want crops up. Thus, different wants appear one after another.
 2. **Limited means to satisfy human wants:** Though wants are unlimited, yet the means for satisfying these wants are limited. The resources needed to satisfy these wants are limited. For example, the money income (per month) required for the satisfaction of wants of an individual is limited. (*Any resource is considered as scarce if its supply is less than its demand*).
 3. **Alternative uses of scarce resources:** Same resource can be devoted to alternative lines of production. Thus, same resource can be used for the satisfaction of different types of human wants. For example, a piece of land can be used for either cultivation, or building a place to live or building a factory shed, etc.
 4. **Efficient use of scarce resources:** Since wants are unlimited, so these wants are to be ranked in order of priorities. On the basis of such priorities, the scarce resources are to be used in an efficient manner for the satisfaction of these wants.
 5. **Need for choice and optimisation:** Since human wants are unlimited, so one has to choose between the most urgent and less urgent wants. Hence, Economics is also called a science of choice. Scarce resources are to be used for the maximum satisfaction (*i.e.* Optimisation) of the most urgent human wants. That is some wants are forgone to give opportunity to others to be satisfied. This brings about the concept of ‘Opportunity Cost’.
- Understanding some of the points listed above will help the participants to explain why the ABCs chose a particular commodity among others and why some people get more yields than others etc.

Step 2: Identifying & Classifying Resources

1. **Group exercise:** Introduce **Exercise 2 – Part A**. In doing this:
 - Divide participants into 3-4 groups (this will depend on the number of participants and also take into consideration the commodities of interest. We recommend that people with similar commodities be grouped together)
2. **Plenary:** Ask them to present their lists so that the other groups can contribute to them.
3. **Plenary exercise:** Introduce **Exercise 2 – Part B**.
 - Ask the participants to classify the various resources listed from the previous exercise into Natural, Material, Human and Financial resources. See an example below.

Natural Resources	Material Resources	Human Resources	Financial Resources
Land	Seeds	Managers	Cash

Sunshine	Fertilisers	Employees	Bank drafts
Rainfall	Equipment	Customers/Clients	Loans
Sea/other water resources	Vehicles	Other actors in the cluster	Promissory notes
	Buildings		Shares
	Etc.		Insurance
			Etc.

Step 3: Considering the decision-making process for Agribusiness actors

1. **Plenary Brainstorm:** Ask participants to find out how decisions are arrived at, at their individual levels, as well as at their cluster levels. List their answers down.
 - Ask them again whose duty it is to take the final decision. Take note of that response as well.
2. **Facilitator presentation:** Outline the standard process all decision-makers go through with practical examples as follows:
 - o Set your objectives.
 - o Identify the challenges hindering (or can hinder) you from achieving your objectives.
 - o Collect the needed information and data on the challenge.
 - o Identify the various solutions that can be used to resolve the challenge.
 - o Analyse alternative solutions taking into consideration the available resources.
 - o Make a decision by selecting the best solution.
 - o Implement the decision selected.
 - o Monitor the outcome of the implementation by taking corrective measures.
 - o Evaluate the results of the decision.

Advice for the facilitator on how to make use of managerial economics and the decision-making process

- Explain to the participants that Business management involves the use of all natural, financial, material and human resources available to the enterprise to achieve the desired objectives for the business. It also involves the administration management functions necessary for the operations of the business i.e. Planning, Organizing, Communication, Delegation, Motivation, Supervision and Control.
- Guide participants to unveil some of the reasons why management is important to agribusiness. Some of the reasons may be as listed below:

Changing prices: Prices of inputs and outputs are constantly changing in line with supply, demand and market forces. Changes in the prices of inputs and outputs affect the overall profit of the business.

Changing resource availability: The quantity available of any input to be used has a direct impact on profit. Problems of availability of supplies could result in the reduced use of hybrid seeds, fertilisers etc. and farmers would constantly need to reformulate their past decisions in relation to the resources available.

Changing technical relationships: The relationship between inputs and outputs changes as technological advances are made. For example, a new tractor may be introduced that has improved labour efficiency and, hence, lower labour costs. This would have an effect of enhancing profitability.

Changing institutional/social relations: Factors concerning access to markets, financial institutions, government support and private sector linkages that affect the industry's performance.
- Although people in agribusiness are in the position to control the use of some of their own resources, they cannot control the factors and conditions surrounding them. They have to constantly assess the potential benefits of available technologies and reassess the relationship between inputs and outputs.

Step 4: Simulating Decision-making Process

1. **First in plenary, then group exercise:** Explain that the participants will demonstrate the decision-making process through a group exercise (**Exercise 3**).
2. **Presentations in Plenary:** Following the exercise, ask the groups to present the outcomes of the exercise. Shortly discuss the key elements of decision-making.

Advice for the facilitator on delivering the decision-making process

- Explain to the participants that every manager of agribusiness is responsible for taking decisions regarding the volume of output to be produced during any particular time period in order to optimise profit. To be able to achieve this, the manager either may want to maximise its output given its cost constraint or minimise the cost given the targeted output.
- Make sure participants understand this explanation by letting them express it in their own way. You as a facilitator have to make sure the understanding is clear.
- Let them also understand that the term 'manager' does not apply to a boss in the office in a formal establishment who is supervising a set of workers only. The individual farmer/processor or marketer organizing the inputs to produce, process or market, is a manager for his/her production or processing unit as well, and as such responsible for going through the decision-making process.

Additional reading

- Reference Sheet M6/2: The Decision-making Process

Session 3: The Building Blocks (Record-Keeping)

Introduction

Managers always have to make decisions and it is important that, at all times, the best decisions are made. When decisions are made in a logical manner, and based on accurate information, they are most likely to lead to the achievement of good results for the agribusiness manager and/or the family. Information is needed to diagnose the causes of challenges and to come up with proper solutions. Important sources of information for agribusinesses include: extension agents, other farmers, newspapers, magazines and other written materials, and business records.

Agribusiness records provide useful information to operators and also help the enterprises increase their profits, adjust their practices, select the best investment options/strategies, determine the best use of available resources, obtain credit and formulate production, processing, and marketing plans.

Apart from using records in management decision-making, records kept by individual businesses sometimes contribute to the basis of formulating national policies, programmes, and action plans. Various types of records are needed by the cluster to monitor and evaluate the business of an individual actor or the performance of the entire cluster. Physical, technical, and financial records help to diagnose the various aspects of the enterprises' operation and prevent emerging challenges.

Learning objectives

At the end of this session the participants will be able to:

- Understand records and their importance to agribusiness
- Identify some of the basic records that can be kept in agribusiness
- Practise how some of the basic records can be recorded and kept
- Analyse some of the records kept to inform decision-making

Procedure

List of tools/equipment required

- Cards, markers
- Tape – or Pins and a Pin board
- Flip chart sheets

Step 1: Probing to find out how records are kept by cluster actors

1. **Plenary introduction and brainstorm:** Introduce the topic, and then find out from the participants what their understanding is of business records and record-keeping. Take note of their responses and lead them to properly understand what records are. Next find out from the participants in what form are records usually kept by the members of their clusters, especially the farmers and the processors. Judge whether formal record-keeping is high or low among the cluster members. Then ask:

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- For clusters that have a higher habit of record-keeping, what contributed to this? (Factors such as higher literacy, training received on it, etc. may have contributed).
- For clusters with low formal record-keeping, what are the contributing factors? (They may include: illiteracy, it may not be seen as important, they may not have the time, etc.)

Lead the participants to identify some of the records that are generated internally (from their own sources); e.g. their yield records, land holdings, acreages put under production, crops put under production, money in their bank account, and assets they own.

Similarly, let them come with some of the external sources of getting information, such as prices, markets, trade unions, ministries, research centres etc.

Advice for the facilitator in leading trainees to get some practical ways records are kept especially by illiterate farmers.

Let them know that in our part of the world (Africa) most farmers commit business records to memory. (As a practical question, find out from them, in case of illiterate farmers, what may be some of the practical possibilities to ensure keeping formal records (i.e. documented records) from information generated from their own enterprises. Take note of some of the innovative ways that will result from this discussion and report on them.

Step 2: Discussing the Sad Story of the Rich Cocoa Farmer

1. **Reading in plenary:** Ask one participant to read out loud the story of Papa Kwesi, the rich cocoa farmer from Ghana. Explain that the other participants should listen and write down information on how Papa Kwesi lost his cocoa farm.

Sad Story of the Rich Cocoa Farmer

Papa Kwesi, a young, hard-working and visionary farmer, lived in Nyamedom, a well-known cocoa growing village in the central part of Ghana. Also living in the village was a worthy, elderly cocoa farmer. One day, the young man approached the elderly farmer for advice on how to become a successful farmer like him. Looking at the high interest shown by the young man, the elderly man was willing to assist him to get into serious cocoa farming. He decided to give him a large tract of his own land on which he could establish the farm. They agreed that, when the farm would start yielding, it would be divided into three parts of which the young farmer could take two parts, and the third part would be for the land owner, as used to be the tradition in the area.

Although the two farmers were illiterates, the elderly farmer went to the local letter writer in the next town to put the agreement into writing. He brought the contents to the young farmer to thumb print. Due to the trust and the anxiety in the young man to start his farm he hurriedly thumb printed without knowing the contents or even asking for a copy of the agreement.

After this, a large tract of land was released to the young farmer who through his hard work in no time developed it into a nice cocoa farm soon also making him rich. The two farmers became good friends. One day when the two friends were having a conversation, the elderly farmer told Papa Kwesi that he was no longer interested in sharing the farm with him, and that he should just pay him a token amount so that he could keep the whole farm for himself. The young farmer readily did this by paying a lump sum to the senior farmer. This was done between the two.

After some time, the elderly farmer passed away. After the funeral, his children found the old agreement signed between their father and the young farmer. The children then approached the young farmer to get their share of the farm. The young farmer said he had already paid for that portion. There was no evidence, though, to support his claim. The children took the case to court and eventually won. In addition to sharing the farm with the children, the young farmer was also asked to pay for all the years he used the proceeds from that portion of the farm, with interest, to the children. The young farmer could not find enough money to pay and the court ordered the whole farm to be taken from him to defray the debt.

2. **Plenary brainstorm:** After the reading, ask the participants what Papa Kwesi could have done to protect himself and his property.

Advice for the facilitator – examples of discussion points

- Papa Kwesi should have asked the contents of the agreement to be read to him to understand, before thumb printing it.
- He should also have had the transactions be witnessed by somebody else.
- The agreement should have been twofold so that he also kept a copy.
- At the time of making the payment to the elder farmer, Papa Kwesi should have made it in front of a witness and demand a receipt or any note acknowledging the payment, and to keep this.
- He should have informed any of the children or wives of the elderly man about how he had borrowed resources to invest in his farms and how he had paid back.

Finally, the moral of the story is: We should always aim to properly document any transactions we enter into, no matter how well we trust the other party.

Step 3: Understanding why records are important, and what should be recorded

1. **Plenary discussion:** Ask participants why they think it is necessary to keep records. Then explain that business records are documented and kept for a variety of reasons. For example:
 - When records are not written down or documented but committed only to memory, people often forget crucial information that might be needed to find solutions to their business challenges.
 - Lenders and financial institutions will not take people seriously who do not have documented records, only providing information such as production, income, and profit estimates based on memory.
 - Credible business taxes cannot be properly computed without written or documented records. Where such records are absent, tax assessors are compelled to make their own best estimate of taxes to be paid. In many cases, estimates may lead to the tax payer paying a higher tax rate.
 - Disputes can arise concerning both debts owed to the business and debts the business owes to others, without good written or documented records been kept.
 - If the owner of the business is ill, or has an emergency and needs to leave the business for a period of time or even dies, the successor may not have a historical record of continuation.
 - Record-keeping is also important as an instrument to analyse the performance of a business, to see whether the resources committed are optimally used.

2. **Continue plenary discussion:** Ask participants what good records look like, and how to distinguish between good and bad records. Let them know that records can range from very simple to very complex forms depending on the knowledge/expertise, what it is needed for, available facilities, etc. But every good record must be capable of providing some basic information. The following are some examples of such information:
 - The **date** on which transactions take place or on which the information can be referred to.
 - A brief detail of the transaction, e.g. is it a purchase or a sale? Production activity on the farm? Money borrowed or lend to somebody? This is normally termed '**particulars**'.
 - The **location** where the transaction took place. This can also be provided through addresses, name of business, town or suburbs etc.
 - Any **amount of money** associated or involved with the transaction. The value of transaction involved must be clearly stated in the currenc(y)ies of interest. Preferably, the amount must be written in both words and figures.
 - Ideally, the transaction must be **witnessed** or **sealed**. This can be by signatures or thumb prints from witnesses or/and the parties involved, office stamps or seals, photographs, etc.

3. **Buzz groups, then make a checklist in Plenary:** Ask participants to shortly discuss with their neighbour (in pairs) to come up with the information they think are necessary for their cluster actors to keep record of. Then ask them to help make a list in plenary, writing on a flip sheet.
 These may include cashbook, bank transactions, sales, purchases, debtors, creditors, production, labour/personnel, assets/inventories, financial statements, records from

meetings, receipt books, invoices, waybills, etc. (See **Reference sheet M6/3** for more information on some of these records and suggested formats)

Step 4: Practising how to complete business records

1. **Group exercise:** Explain that the participants will now do a practical exercise of completing some business records. This will be based on the information provided in the *Nowherecool* case and more specifically regarding a farmer known as James. In **Exercise 4**, some of the activities recorded by James' yellow maize farming enterprise are detailed. Explain that these only represent a limited list of transactions to be able to complete the exercise, as there is not enough time to do an extensive book-keeping exercise. (*Ample solutions can be found at the end of this Facilitators Guide, as appendix*).
2. **Plenary presentations:** Ask each group to present their tables to each other, for learning and discussion.

Step 5: Concluding the session

1. **Plenary concluding statement:** Emphasise that the best way to store farm records in modern agribusinesses is by using computers with an appropriate software package, e.g. Word, Excel, Access, etc. By entering production, financial and other information in this way into the computer, the farmer can use the computer to automatically come up with projections for outputs and revenues, to develop reports and financial statements for lenders, etc.
Using computers, however, requires adequate backups so that vital documents are not lost through mistakes or other unforeseen circumstances. If the farmer cannot get access to computers, the use of good books (journals and ledgers) offers a good alternative.

Additional reading

- Reference Sheet M6/3: Detailed information on Record-Keeping

Session 4: Introducing two Economic Analysis Tools: Business Activity Budgeting and Cash Flow

Introduction

A business budget represents a physical and financial plan for the operation of a business for a particular period of time. It can help organise important business management operations in a better way. It can also be seen as a written plan for future actions and the anticipated results.

Basically, business budgets, like any other budgets, are related to two (2) figures, which are: *Total Revenue* and *Total Expenses*. The difference between the two figures may be *Net Profit* (i.e. *Net Returns*) or *Net Loss*, depending on whether revenues are higher or lower than expenses. The rest of the budget includes details leading to this result.

In general, the literature on budgets normally describes different types of budgets, namely: Complete Budget, Partial Budget, Parametric Budget, and Cash-flow Budget, among others. This module will mostly focus on complete budgets.

Learning objectives

At the end of this session the participants will be able to:

- Understand the key terms associated with budgeting, with their correct definitions
- State the importance and some purposes of budgeting
- Arrange the sequence of steps in developing a complete agribusiness budget, with farm budgets as example
- Complete an enterprise budget for an agribusiness
- Understand cash flow and how to plan for it.

Procedure

List of tools/equipment required

- Cards, markers
- Tape – or Pins and a Pin board
- Flip chart sheets

Step 1: Understanding Budget as it Applies to Agribusiness

1. **Plenary starter:** Find out from participants how many of them work with budgets with their institutions (like BSS) and for the various categories of actors in their cluster. It may come out that working with a budget at the BSS level may be common, while being much less so at the level of cluster actors, especially that of producer farmers. Ask some participants to share their own experiences concerning the use of budgets, at any level.

2. **Plenary checklist:** Probe more deeply by asking whether they think the use of budgets is useful or not. Let them mention how they find budgets useful and write them down on the flip sheet. Some of the obvious reasons regarding agribusiness budgets should include:
- Business budgets help managers think more accurately and plan more intelligently and carefully.
 - They assist them to select factors of production more wisely.
 - A written plan expressed in budgets makes a good impression on other people.
 - A budget helps the manager to know when there will be the need to borrow money for the activities.
 - A budget forces the identification of items of cost that are frequently overlooked.
 - A budget helps to save money as it is much cheaper to make mistakes on paper than in real business.
 - Budgets help to compare projected expenses with actual expenditure.

Step 2: Understanding how to prepare a budget

1. **Plenary introduction by facilitator:** Explain that the objective of making a business budget is to project the business into the future and observe what will happen later. People therefore need to follow some laid down systematic procedures in preparing the budget. The following steps can be considered:
1. Estimate the annual total production to be realised, using average yields or production rates expected from each enterprise (that is, identifiable business activities).
 2. Estimate the average prices that will be received over the period for the various categories of items of produce.
 3. Compute the estimated annual Gross income by multiplying the estimated price with the total production of each enterprise and sum up.
 4. Estimate the average operating cost for the period for each enterprise and sum up.
 5. Calculate the Gross Profit by deducting operating expenses from Gross Income.
 6. Calculate the Net Profit by adjusting for the changes in the inventories and fixed expenses during the period.

Advice for the facilitator to prepare this session

- To get more details on the budget procedures, see **Reference Sheet M6/5** on Budget and Budgeting.
- See the example in the Box below of how the step is followed and to see a recommended presentation on an enterprise budget for yellow maize.
- In gathering information for products and inputs, be sure that you are well acquainted with the technical details of the enterprise. After gathering the physical and technical activities, you then cost them and transform them to financial information by attaching realistic values to them.

2. **Group exercise:** Let the participants go back into their groups to use the existing information in **Exercise 5** to prepare a budget for the yellow maize enterprise of James Farm Enterprise.

Plenary presentations: After the exercise, ask the groups to present their group work for others and welcome their contributions.

Advice for the facilitator: Guide the trainees to follow the same step to develop budgets for different Enterprises

Sample Format of Crop Budget for Rainfed Hybrid Yellow Maize Production on Using Improved Methods						
	Item / Activity	Quantity per Acre	Unit of Measure	Unit Price/ Cost (US\$)	Total Value per Acre (US\$)	Total for 'X' Acres (US\$)
	Receipt					
	1. Yellow Maize		Tons/ Bags			
	2. Other Farm Income					
A.	Total Receipt					
	Operating Cost					
B.	Land Rent		Annually			
C.	Land Preparation (plough and harrow)		Per Acre			
D.	Labour					
1.	Sowing		Acre			
2.	Weed control, 2 times		Acre (2 times)			
3.	Fertiliser Application, 4 times		Acre (4 times)			
4.	Harvesting		Acre			
5.	Post-Harvest handling and marketing		Bags			
6.	Miscellaneous labour cost		Man-day			
	Sub Total					
E.	Variable Inputs					
1.	Cost of Hybrid Seeds		Single			
2.	Compound Fertiliser (NPK 23-10-5)		Bag or kg			
3.	Crop Protection Products		Litre			
4.	Bags for Bagging		Bags			
5.	Commission on Production for Assoc.		Bags			
	Sub Total					
F.	Total Operation Cost (B+C+D+E)					
G.	Gross Margin (A-F)					
H.	Fixed Cost and Contingencies					
1.	Depreciation on Fixed Assets					
2.	Interest on loan					
3.	Fees and Statutory Taxes					
4.	Association Membership dues					
	Sub Total					
I.	Total Expenses (F+H)					
J.	Net Profit (A-I)					

Note: This is a generic budget format that can be adapted to suit the activities of any actor along the value chain and can also be adapted to cater for any volume of activity. For example, in the case of farmers, activities may start with land and other input acquisition, whereas in the case of processors and marketers, they may begin from the point of purchasing raw materials or goods (that is output for farmers) to process or to sell. To cater for a desired volume, you just add another column and do the multiplication for that level. For example, if you want to extend this budget to cover activities of fifty farmers in the cluster with a total of 150 acres, a column can be added and all the parameters multiplied by 150.

Step 3: Determining the Cash flow issues and statement

1. **Plenary question:** Ask one of the participants with regular employment to tell the others if he/she knows when there will be no payment for the next three months what he or she will do. Ask others to contribute to what their colleague said. Take note of their answers and tell them that this often happens in business; It is these kind of situations that call for cash flow planning for the business.

2. **Plenary brainstorm followed by facilitator explanation:** Ask what is the importance of cash flow statements within agribusiness cluster settings. Make sure the message is clear: *A projected cash flow statement allows people to better predict whether or not they will have sufficient funds on hand each month, to pay for expected expenses.*
 - **Continue** by letting them know that a projected cash flow statement is essentially the projected budget that is spread over the year (12-month period). It is more important during the production phases of agricultural products. This is so because agribusiness people, especially farmers, do not receive all their income in a single month. Likewise, they do not incur all expenses in a single month.
 - **Add** that the projected cash flow statement is a planning tool which allows managers to picture in which periods (months) they can expect to receive income from sales or from other sources, and in which months they will incur expenses. This planning tool is very important as it provides agribusiness people with the information required to ensure that they have sufficient funds at hand at all times to pay for all of expected expenses for the period in which they are due.

In many cases, particularly with agribusinesses, the business could be earning a profit, but does not have good cash flow. At times, it happens that expenses are incurred at a time that the businessperson has insufficient cash on hand to pay for them. In these cases, the person has to borrow money to pay for the expenses until they have got the produce ready and it is sold.

Show the sample format for a cash flow budget on the next page.
 - Continue to discuss with participants some of the strategies they can adopt to deal with cash-flow problems in the event they find that there are one or more months in which they do not have sufficient cash on hand to pay for their expenses; for example:
 - They may decide to request a short-term loan from a relative, friend, or a financial institution.
 - They can also decide to defer some expenses to another time if only their deferment may not interfere with meeting the production and income goals.
 - There will be the need to cut down on some of their expenditures.
 - They can also decide to have their family or friends assist in performing some farm duties which they had intended to pay for outside the permanent labour.
 - They can shorten the sale dates of some of the produce they may have in stock.
 - As one of the last resorts, they can dispose of some of the capital assets of the business that is not of much use.

	Months												Total (Year) (\$)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
Funds Available (Inflow)													
Cash Available													
Yellow Maize													
Sale of Other Crops													
Non-Farm Income													
Loans													
Total Funds Inflow for the Month (US\$)													
Expenses (Funds Outflow)													
Land Rent													
Land Preparation (Plough and Harrow)													
Sub-Total													
Labour													
Sowing													
Weed Control for 2 times													
Fertiliser Application for 4 times													
Harvesting													
Post-Harvest handling and marketing													
Miscellaneous labour cost													
Sub-Total													
Variable Inputs													
Cost of Hybrid Seed													
Compound Fertiliser (NPK)													
Crop Protection Products													
Bags for Bagging													
Commission on production for association													
Sub-Total													
Fixed Costs													
Salaries of permanent workers													
Office rent													
Utilities (Electricity, telephone etc)													
Household expenses.													
Sub-Total													
Total Outflow for the Month (US\$)													
Deficit / Excess (Total Inflow – Total Outflow (In US\$)).													

Additional reading

- Reference Sheet M6/5: Budget and Budgeting for Agribusiness
- Reference Sheet M6/6: Cash-Flow Management

Session 5: Income/Revenue versus Cost (Variable/Fixed)

Introduction

In the previous session, we learnt that without proper forecasting and cash-flow management, the farmer or the agribusiness practitioners will be exposed to serious cash problems that could lead to the collapse of the business. The two key things that should be carefully looked at are how cash flows into the business (Revenue or Income) and how cash flows out (Expenses or Expenditure).

Learning objectives

At the end of this session the participants will be able to:

- Identify the sources of income flow into their businesses
- Identify how expenses take money out of the business
- Understand methods used to arrive at price estimates
- Distinguish between fixed and variable/operating costs

Procedure

List of tools/equipment required

- Cards, markers
- Tape – or Pins and a Pin board
- Flip chart sheets

Step 1: Identifying Revenue and Expenses for various agribusiness enterprises

1. **Plenary brainstorm:** Ask participants to list the various sources of generating income or bring revenue to the enterprise (*Remember to include by-products that are of value as well*). Select three enterprises with significant differences in activities, out of the following list:
 - a. Grains (maize, rice, soybean, groundnut etc.)
 - b. Vegetables (chilies, tomato, onion, cabbage, tiger nut etc.)
 - c. Poultry (traditional poultry, guinea fowls etc.)
 - d. Animals (cattle, small ruminants etc.)
 - e. Agro processing (dairy, rice milling, groundnut/soybean oil etc.)
 - f. Tree crops (citrus, mango, cashew, pineapple etc.)

As they speak, **note down** their answers in a list under the enterprise headings on flip chart sheets. (*NB: The lists will be used again below*)

Step 2: Understanding different kinds of Costs

1. **Plenary brainstorm:** In the same way, lead participants to list the various ways by which the selected enterprise incurs expenses.

Advice for the facilitator on Revenue Generation and Expenditure:

- If time permits, let the participants indicate the periods/months that these incomes are likely to flow to the business and the periods that the expenses are more likely to be incurred.
- Draw attention to the following observations:
 - Traditional sources of income for the business are only few.
 - Depending on the planning and forecasting of the enterprise, income flow is limited to only few periods/months of the year, except for some special cases of enterprises in which production is especially planned and forecasted for income to flow continually, e.g. poultry (layers), processing, vegetable farming (under irrigation), and dairy farming.
 - On the other hand, the items that constitute expenses are without limit. You can continue listing without end.
 - Most expenses can occur in any period.
 - Agribusiness people need to forecast well and plan with realistic budgets. They also need total discipline in sticking to their plans and budgets so that they don't deviate too much from what is planned which will lead their business to face challenges with cash flow.

2. **Plenary lecture by facilitator:** Begin by explaining the theory of costs. Use the information below to assist you in your lecture.

Total Cost:

This is the overall cost incurred in producing a certain quantity of output, e.g. 100 bags of yellow maize, or the cost incurred when working on a definite size or volume of e.g. cultivating a hectare of land or processing one tonne of soybean. Total cost is usually classified into two categories namely; **variable** and **fixed costs**. The classification of some costs as variable or fixed in some cases depends partly on the nature and timing of the management decisions considered. This is because some costs may be fixed in relation to certain decisions, but others remain variable.

Variable Costs:

Variable costs are short-term costs (usually made within one year or within a single production cycle) and include items that:

- occur only if the production/processing takes place (and do not occur if nothing is produced or processed);
- tend to vary according to the size or volume of production or processing; and
- can easily be allocated to individual enterprises.

Fixed Costs:

Fixed Costs unlike the variable costs are generally long-term costs (lasting for more than one year). They are defined as costs that remain the same, regardless of the size of the enterprise and do not alter with small changes in size. The allocation of fixed costs to a specific enterprise can be difficult in some cases. Fixed costs (e.g. production and processing equipment) are more difficult to allocate.

3. **Plenary exercise:** Once this background information is clear to participants, ask them to classify the costs listed earlier, as to whether they are fixed or variable.

Note their answers on the flip chart sheet alongside the costs.

Advice for the facilitator on Distinguishing Costs:

- Stress the fact that it is the duty of a farmer/farm manager to be able to differentiate between the two types of costs, i.e. fixed and variable costs.
- **Fixed Costs** are expenditures not directly related to the production process and expenditures that do not vary (or only a little) with the production process. Let the participants also know that each enterprise has its own fixed costs and each farm manager must list out these costs and know how to allocate part of them to particular enterprises (e.g. through depreciation of fixed assets or user charge on commercial rate, and hourly or any unit of use). Common examples of fixed costs in agribusiness include permanent buildings, salaries of permanent staff, land (lease for long term use), insurance paid (on buildings and other fixed assets), utility bills (e.g. for electricity, telephone, water, postal services, internet, etc.), bank transaction costs, interest on loans, irrigation system, etc.
- **Variable costs** on the other hand are costs incurred that are directly related to the production cost. They are easily identifiable. They include costs incurred on casual labour for the production of certain products, fertilisers, pesticides, seeds, raw materials purchased by processors for processing, transporting of inputs and outputs, depreciations charged from the use of fixed assets to the particular enterprise etc.
- There may be **other overhead costs** incurred by the company, such as association membership dues, attending conferences, etc. The total of costs under this can be shared among the various enterprises according to the financial strength of business or according to the extent such meetings benefit the various enterprises.

4. **Reflect on cards:** Ask participants to write on two cards reflecting the following:
 1. What is relevant to their clusters about this session?
 2. What they will like to introduce to their clusters from the session?

Additional reading

- Reference Sheet M6/6: Revenue/Income versus Cost/Expenses (Fixed and Variable)

Session 6: Analysing Profitability of the Enterprise (Gross Margin and Profitability Analysis)

Introduction

Analysing the profitability of an enterprise reveals the gains or deficits (losses) made by the enterprise after taking into account its full costs in achieving the activity. Some enterprises may be highly profitable, whereas others are less profitable or not profitable at all.

Enterprise profitability analyses need to be conducted for different agribusiness activities to identify problems of low profitability. One of the tools recommended for doing so is the Gross Margin. This session will touch on this tool, and continue to look at profitability and finally explain how agribusinesses can use this and other tools to stay alive.

Learning objectives

At the end of this session the participants will be able to:

- Understand and recognise profitable enterprises
- Understand what is meant by Gross Margin and will be able to calculate it
- Distinguish between Gross Profit and Net Profit
- Compute Gross and Net Profit for an enterprise

Procedure

List of tools/equipment required

- Cards, markers
- Tape – or Pins and a Pin board
- Flip chart sheets

Step 1: Determining well Performing Agribusinesses

1. **Plenary brainstorm:** After a short introduction, brainstorm with the participants on their understanding of a good performing business and on the characteristics of such businesses. Take note of the answers given and list them.

Remind participants that most agricultural businesses may be made up of more than one enterprise, each with its own distinct source of income and expenses that contribute to the overall profit of the business.

Advice for facilitator on Determining Enterprise Performance:

- Some of the characteristics that can be observed of well performing businesses may include:
 - Continuous existence of the business. A well performing business will continue to exist whereas non-performing ones may fold up.
 - Expansion in activities: A well performing agribusiness may expand in several ways including in the number of enterprises, branches or geographical areas covered, in assets, etc.
 - Receiving recognition from patrons, customers/clients, shareholders, general public.
 - Improvement in qualities of goods and services delivered.
 - Lower costs of production.
- The more of these characteristics a business exhibits, the more successful it will become.

Step 2: Analysing the Gross Margin of a business

1. **Plenary lecture by Facilitator:** Explain the concept of Gross Margin to the participants, using the following talking points:

Gross margin is a simple, useful and practical tool to assess performance of the business. The Gross margin for an enterprise is defined as the gross income minus its variable costs.

$$\text{Gross margin} = \text{Gross income} - \text{variable costs}$$

For example, a farmer or agroprocessor who invested his/her resources worth \$500, and who had variable costs valued at \$270m generates a gross margin of \$230 (\$500-\$270). The gross margin is a measure of what the enterprise is adding to its profits. Variable costs rise and fall as the output expands or contracts. However, the fixed costs are not affected. It is only the variable costs and value of output that increase. If the extra variable cost is less than the value of the output, the inventor breaks even and can increase profits. If, however, the variable inputs increase more than the value of output, the inventor cannot break even and will be heading towards deficits.

The Gross Margin Analysis is a very useful analytical business tool because it provides valuable comparative information to assist managers with the following:

- Relative profitability of various farm business enterprises can be analysed
- Identification of the important factors influencing profitability of each individual costs can be analysed and compared
- Making industry comparisons that enable the identification of industry's best practices
- Identification of the strengths and weaknesses of an enterprise to develop strategies to improve performance.
- Planning of a profitable enterprise taking into account the technical limits of each enterprise, maximizing the effective use of limited business resources.

Step 3: Assessing and improving Enterprise Profitability

1. **Plenary brainstorm:** Start with a short brainstorm with participants to see their view on profits.
2. **Group exercise:** Let the participants break into groups to do the financial analysis of James' Farm Enterprise as described in **Exercise 6**, and prepare the Financial Statement (Profit and Loss Account).
3. **Plenary presentations & discussion:** Once the groups have completed the exercise, ask them to present their work to the others for discussion. Be sure that the following points come forward during the discussion:

- The calculation of enterprise profitability consists of deducting all of the costs incurred for the enterprise, i.e. fixed and variable costs, from the enterprise gross income.
 - Let the participants know that measuring profitability is one of the most important measures of success for profit-making businesses. For that matter, a business that is not profitable cannot survive. On the other hand, a business that is highly profitable has the ability to reward its owners with a large return on their investment.
 - Increasing profitability is therefore one of the most important tasks of business managers. Good Managers constantly look for ways to change the business to improve its profitability.
4. **Plenary brainstorm:** Ask the participants to mention ways to improve profitability within their own agribusiness clusters. From their answers, make a checklist on the flip chart sheets. The list may include for example:
- Shopping for inputs from various sources and buying at the least cost
 - Buying inputs in bulk to be able to pay (lower) wholesale prices
 - Using the best input combinations to increase output
 - Shopping and negotiating for the best price for your products
 - Hiring of people with the requisite knowledge and skills for a specific job
 - Ensuring the production of quality products to attract premium prices
 - Bulking your products to meet quantity supply to assured, ready markets
 - Avoiding unnecessary waste in input use and output loss
 - Avoiding too much sale on credits
 - Paying your schedule payments including interest on loans to avoid payment of penalties

Step 4: Computing the Gross Margin and Net Profit

1. **Group work:** Let the participants refer to their previous group work on the budget (see results of **Exercise 5**) and go into groups again to make the related financial statements to compute for Gross Margin and Net Profit: see **Exercise 6**.
Note that time will probably not be enough to complete the exercise and therefore you will have to present the pre-established table below (**but first remove the computed figures of gross margin and net profit G, H, I and J - as you will calculate these together**).
2. **Plenary presentation and discussion:** Present the table below (without G, H, I and J filled in). Go through it with the participants and discuss where needed.

FINANCIAL STATEMENT (PROFIT AND LOSS ACCOUNTS) OF JAMES FARM ENTERPRISE FOR 2013.					
	Item / Activity	Quantity	Unit of Measure	Unit Revenue/Cost in US\$	Total Revenue/Cost US\$
	Receipt				
1.	Yellow maize	250	Bags (100kg)	40.00	10,000.00
2.	Receipt from other crops				
3.	Non-Farm Income				
A.	Total Receipt				1,000.00

	Operating Cost				
B.	Land Rent	10	Annually	10.00	100.00
C.	Land Preparation (Plough and Harrow)	10	Acre	50.00	500.00
	Sub Total				600.00
D.	Labour				
1.	Sowing	10	Acre	20.00	200.00
2.	Weed Control for 2 times	10	Acre (2 times)	40.00	400.00
3.	Fertiliser Application for 4 times	10	Acre (4 times)	80.00	800.00
4.	Harvesting	10	Acre	20.00	200.00
5.	Post-Harvest handling and marketing	250	Bags	3.00	750.00
6.	Miscellaneous labour cost	100	Man-day	4.00	400.00
	Sub Total				2,750.00
E.	Variable Inputs				
1.	Hybrid Seed Maize	90	Kilogram	5.00	450.00
2.	Compound Fertilizer (NPK 23-10-5)	40	Bag (50 kg)	40.00	1,600.00
3.	Crop Protection Products	20	Litre	7.00	140.00
4.	Bags for Bagging	250	Single	0.50	125.00
5.	Commission on production for association	250	Single	0.50	125.00
	Sub Total				2,440.00
F.	Total Operation Cost (B+C+D+E)				5,790.00
G.	Gross Margin				4,210.00
H.	Fixed Cost and Contingencies				
1.	Depreciation on Fixed Assets				1,000.00
2.	Interest on investment for 6 months at 10%				421.00
3.	Fees and Statutory Taxes				15.00
4.	Association membership due				10.00
	Sub Total				1,446.00
I.	Total Expenses (F+H)				7,236.00
J.	Net Profit				2,764.00

3. **Plenary calculation exercise:** Ask the participants to compute the gross margin and the net profit according to the formulas below:

$$\text{GROSS MARGIN} = \text{Gross Income} - \text{Variable Cost}$$

$$\text{NET PROFIT} = \text{Gross Margin} - \text{Fixed Cost}$$

Present and discuss the correct answers, and complete the table together.

Step 5: Figuring out the Break-even Point

1. **Plenary discussion:** Ask the participants whether the business always has to make profit in order to exist. Depending on their answer, go ahead and inform them about the break-even point, using the talking points below.

Remind the participants that there may be a situation where a business may not be making profit nor loss but it can still be operating. That it is then perhaps spending both on variable and fixed cost exactly the same amounts as the revenue received. Explain

that this is the lowest point at which to keep the business running and it is known as The '**Break-Even Point**' (BEP).

Also explain that the break-even point (which can refer to the number of units to sell or revenue to realise to be able to break even) is required to cover total costs, both fixed and variable. Total profit at the break-even point is zero. Breaking even is only possible if a firm's prices are higher than its variable costs per unit. If so, each unit of the product sold will generate some 'contribution' toward covering fixed costs.

Finally conclude by explaining that in economics and business, therefore, the Break-Even Point is the point at which total cost and total revenue are equal. At this point there is no Net Loss or Net Gain. In the same way, neither a profit nor a loss has been made although opportunity costs have been incurred and 'paid' for and capital has received the risk-adjusted expected return.

In short, all costs that need to be paid for are paid by the firm, but the profit is equal to 0.

Additional reading

- Reference Sheet M6/7: Gross Margin Analysis
- Reference Sheet M6/8: Gross Profit
- Reference Sheet M6/9: Profitability Analysis

Session 7: Preparation and ToR for Field work

Introduction

Following this workshop, each coach is expected to facilitate at least one meeting with ABC actors to support them to learn to analyse their agribusinesses based on economic principles. This is likely to go beyond just one coaching session with the ABCs and will involve continuous gathering of information, and filling of forms.

Learning objectives

At the end of the session, the participants will have a better understanding of the relevance of the different concepts and tools on economic analysis and be able to guide their clusters to analyse their economic activities to operate in a profitable manner and continue to learn and be in business.

Procedure

List of tools/equipment required

- Cards, markers
- Tape – or Pins and a Pin board
- Flip chart sheets

Step 1: Review the sessions

Plenary discussion: Review the different sessions and tools used during this workshop; for each session:

- what topics were treated and what tools use
- what did you learn
- what will be relevant for use and application

SESSION	TOPIC	WHAT I LEARNT	WHAT WILL BE RELEVANT TO BE APPLIED TO MY CLUSTER
1.			
2.			
...			

Step 2: Getting to a plan for an ABC coaching session

1. **Explanatory lecture by facilitator:** Let the participants know that in working with the ABC actors they will not be able to simply follow the methodology that was adopted in the workshop conducted for them, in particular, regarding the group work and presentations. The **ABCs require something that is practical** and that they can apply immediately. How the concepts and the principles learnt in this module therefore need to be adapted and 'repackaged' in a practical (and relevant) way to adequately meet the needs of the cluster actors. Explain that it helps to start talking about a topic by first focusing on what is common/known to most of the actors and then moving to things that can be done at the individual levels.

Suggest the following tips on how to do this:

- Guide the actors to understand that they are working in the best value chain according to the resources within their disposal and it has the potential to bring them the best economic returns. Use some economic indicators like yields, prices, available inputs, market availability etc., to establish these facts.
- Then identify the various resources (natural, human, material and financial) that are required to get into the business of this activity.
- Evaluate with the ABC actors how these resources are currently used in terms of types, quantities, cost, combinations, etc. and compare with recommended usage pertaining to the area.
- Establish the output that is realised by members currently in terms of yields, revenue and profit. You can probe for both the best and the worst case scenario.
- You can ask the person with the best output to tell others what he/she did to realise that. In the same way, you can ask the one with the least output to explain what happened that resulted in the poor performance.

Advice for the facilitator in leading participants in getting the differences in the two scenarios

- When the two farmers/actors are narrating their situation, probe for the following to be established clearly:
 - The variety of the crop or raw material that was used
 - The source of the seed/planting material that was used, as well as the other inputs and their cost
 - The time of planting/sowing/carrying out the processing or marketing
 - How and when the farmer went about the agronomical practices, i.e. fertiliser application (quantities and the time/ stages that they were applied), weed control (time and stages), pest and disease control, time/stages of harvesting, etc.
 - When the produce was sold and how the sales were organised.
 - And any other information peculiar to the commodity in question.
- After establishing these facts, point to them any difference that might exist in the way the two farmers approached their activities that brought about the difference as they saw.
- If they all agree with the differences, you can then ask them what they are going to do to be able to get to the position of the best performing farmer/actors?
- The facilitator/coach should take note of their answers and advise them on how they can act upon it. E.g. how and where they can get the right inputs, the approach they can adopt to ensure they perform their activities efficiently, how to market their produce profitably, etc.

- Continue to develop together with the participants an indicative budget for their activity. This should be interactive with contributions coming from all members present.
- From this budget, go on to use the economic tools to compute the Gross Margin and Profit with them and explain what they mean.
- Finally, let them know that anybody who is operating as part of the cluster and is not using inputs as indicated in the budget or getting outputs close to what is established or, better still, earning a revenue or profit that is about e.g. 90% of what was planned for, is not using the resources economically or cannot be competitive.

Step 3: Assisting the actors to establish a system for tracking their activities and keeping basic records

Plenary tips by facilitator:

- Assist the actors to develop simple record-keeping charts on some key aspects of their activities. Examples include: Production records, sales records, labour records, daily activity's records, incomes and expenditure records, weather charts, assets inventory, debtors and creditors records, cash and bank records etc. See
- Let the cluster actors know that after the individual members have established the means of generating their records, they can help the cluster to easily aggregate the information from them to get useful data at the cluster level as well. Such data may include areas cultivated, yields and outputs from members, inputs requirement and use, etc.
- Also let them know that there are several platforms available where they can register themselves to receive or send useful messages using their mobile phones. Such information includes commodity movements and prices for both inputs and outputs at various locations. These platforms include ***M-farm*** operated by IFDC, ***Esoko***, and many others. You can also ask the cluster actors whether they know of more of such platforms.
- When these records are developed, the coach should agree with the actors as to who should collect the data, when to record them, when they can be inspected, and offer further assistance to them. This can be on periodic visits or they bring them along when coming for meetings, etc.

Additional reading

- Financial Management for Agribusiness, Edited by Wesley. J. Obst, Rob Graham and Graham Christie. (2007). <http://tinyurl.com/nmbwxxe>
- Understanding Profitability, Don Hofstrand – IOWA State University, Extension and Outreach Department. <http://www.extension.iastate.edu/agdm/wholefarm/html/c3-24.html>
- Meaning and Definitions of Economics: <http://www.newagepublishers.com/samplechapter/001983.pdf>
- Reginald Oliver Severin (2012); ICT Application for Fish Enterprise Management, Advance Fisher Folks Management Training Course (AFTC).

Technical and Financial Management of a Commercial Vegetable Farm, *Training Manual*; by Export Marketing & Quality Awareness Project (EMQAP).

Session 8: Workshop assessment

Introduction

Did this workshop *fit the participants’* needs and has it satisfied their expectations? Do they now feel able to train cluster actors in the basic knowledge of economic analysis? These are some of the questions this session would like to have answers to.

Objective

With this assessment, the facilitator can find out whether the workshop was appreciated by participants, and will be able to adjust follow-up workshops, if necessary.

Procedure

There are several ways and tools to assess a workshop, from the beginning to its end, and during the sessions.

- **At the beginning of** the workshop: each participant wrote down his/her expectations and worries; these were summarised and hang out on the wall. The facilitator now reviews these and discusses with the participants to what extent the expectations are met and worries are let go.
- **During** the workshop: at the end of each day (even for a 2-day session), the participants were given the opportunity to reflect on what was done during the day in a Reflection Diary. Ask each participant to indicate how well they appreciated each session, why, and if relevant to propose improvements to the content.
- **At the end** of the workshop: Ask participants to either in plenary, or individually, to reflect on how they experienced the workshop.
 - One option: At the end of the workshop, ask participants to fill in the following table – to maintain anonymity and confidentiality, either completed individually on sheets to hand in - or putting an ‘x’ on a flip chart sheet on the wall, and writing comments on cards to be gone through by the facilitator.
 - Another option: This could alternatively be done in plenary if participants feel comfortable enough to speak out.

Session/topics	Good	Average	Poor
S0: introduction			
S1: Sensitisation on economic questions			
S2: From economics to management			
S3: The building blocks			
S4: Business activity budgeting and cash flow			
S5: Income/revenue versus costs			
S6: Analysing the profitability of the enterprise			
S7: Preparing the ToR for field work			
Your opinion on the facilitation			
Give general or specific comments on			

the workshop			
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Advice to the facilitator

An often recurring issue in a workshop is that time is too short to go through all planned activities. This often affects the time taken for assessment. This final part is very important, however. So, do not forget to assess how it is going at the beginning, during, and at the end of the workshop. This will give you very useful information.

Before starting this session, prepare the synthesis on the participants' expectations.

APPENDIX: Completed Exercises on Record Forms

Table 1: Cash Book

No.	Date	Transaction	Income (\$)	Expenditure (\$)	Balance (\$)	Remark
1	01/01/13	Opening Balance	525		525	Brought from previous year
2	30/01/13	Dues paid for the year		120	132	To Maize Farmers Assoc.
3	10/03/13	Cash from Bank	1,500		1,632	For farming activities
4	15/03/13	Land preparation		300	1,332	Ploughing and harrowing
5	21/03/13	Payment for sowing maize		120	1,212	Hired labour
6	07/04/13	Payment for fertiliser application		120	1,092	Hired labour
7	25/07/13	Payment for maize harvesting		120	972	Hired labour
8	29/07/13	Deposit for maize sheller		800	292	With ABDAH Foundry

Table 2: Bank Register

No.	Date	Transaction	Bank	Cheque #	Income (\$)	Expenditure (\$)	Balance (\$)	Remark
1	01/01/13	Opening Balance	NCB	-	2,520		2,520	
2	25/02/13	Payment from PFA	United Bank	07754	1,000		3,520	Payment for Yellow maize
3	25/02/13	Payment for inputs	NCB	Transfer		205	3,315	Payment for inputs
4	03/03/13	Part payment planter	NCB	12863		1,200	2,115	
	10/03/13	Personal cheque cash	NCB	12864		1,500	615	
5	02/07/13	Bank loan for sheller	NCB		4,000		4,615	Loan with 15% Int.
6	13/07/13	Payment from PFA	United Bank	19927	6,000		10,615	Payment for Yellow maize sold
7	15/07/13	Payment for inputs	NCB	Transfer		1,230	9,385	For inputs supplied.
8	29/07/13	Payment to Sumidan Agric. Engineering	NCB	12865		4,000	5,385	For maize sheller bought.

Table 3: Sales Records

Date	Item Sold / Description	Sold to / Customer	Quantity	Unit price (\$)	Total Sale (\$)	Remark
21/01/13	Yellow maize	Poultry Farmers Assoc.	25 Bags	40	1,000	From field trials in 2012
17/09/13	Yellow Maize	Poultry Farmers Assoc.	150 Bags	40	6,000.00	2013 major season production.
TOTAL FOR PERIOD			175 Bags		\$7,000	

Table 4: Expenditure Record Chart

Date	Item (Goods or Service)	Source of Supply	Quantity	Unit Price (\$)	Total Cost (\$)	Remark
30/01/13	Payment of dues	Association	12 months	10	120	Paid for the year
03/03/13	Deposit for planter	ABDAH Foundry	1	5,200	5,200	Took delivery after deposit
15/03/13	Land preparation	Hired tractor	6 Acres	50	300	Made cash payment
21/03/13	Payment for sowing maize	Hired labour	6 Acres	20	120	Made cash payment.
07/04/13	Payment for fertiliser application	Hired labour	6 Acres	20	120	Made cash payment
25/07/13	Payment for maize harvesting	Hired labour	6 Acres	20	120	Made cash payment
29/07/13	Bought maize sheller	Sumina Agric. Engineering	1	4,800	4,800	Deposited and paid fully with bank loan
TOTAL DURING PERIOD					10,780	

Table 5: Debtors/Receivable Record/ Chart

Date	Name of Debtor	Item Sold to Debtor	Quantity	Unit Price (\$)	Total Amt. Owed (\$)	Payment Due Date	Date of Payment
21/01/13	Poultry Farmers Assoc.	Y. Maize	25 Bags	40	1,000	30/02/13	28/02/13
17/09/13	Poultry Farmers Assoc.	Y. Maize	150 Bags	40	6,000	17/10/13	13/10/13
TOTAL					7,000		

Table 6: Creditors/ Accounts Payable Record Chart

MODULE 6
Economic Analysis and Crop Budgeting

Date	Name of Creditor	Item Bought from Creditor	Qty	Unit Price (\$)	Total Amount Owed (\$)	Payment Due Date	Date Completed Payment
05/09/12	Farmers Friend	Y. Maize Seeds	9Kg	5	45	28/02/2013	25/02/13
22/09/12	Farmers Friend	Fertiliser (NPK)	4 Bags	40	160	28/02/2013	25/02/13
03/03/13	ABDAH Foundry	Planter	1	5,200	4,000	30/11/2013	
10/03/13	Farmers Friend	Y. Maize seeds	54 kg	5	270	30/11/2013	15/10/13
04/04/13	Farmers Friend	Fertilisers (NPK)	24	40	960	30/11/2013	15/10/13
29/07/13	NCB	Loan for M. Sheller	1	4,000	4,600	29/07/2014	
TOTAL							

Table 7: Asset Record for Farm

Asset (Description / Make)	Date of Purchase	Date/Year of Manufacture	Serial / Identification#	Purchased Price (\$)	Current Value (Purchase Price – Depreciation) (\$)	Remarks
Mini size planter	03/03/13	2012	237869	5,200	4,680	Used for 1 year
Maize Sheller	29/07/13	2012	0718031	4,800	4,320	Used for 1 year
TOTAL IN US\$				10,000	9,000	

Table 8: Crop budget for Hybrid Yellow Maize Production on one Acre, using Improved Methods under Rainfed Conditions

Crop Budget for Hybrid Yellow Maize Production on One Acre Using Improved Methods Under Rain Fed.						
	Item / Activity	Quantity per Acre	Unit of Measure	Unit Price/ Cost in US\$	Total Value Per Acre in US\$	Total for 'X' Acres (e.g. 10) in US\$
	Receipts					
	1. Yellow Maize	25	Bags	40.00	1,000.00	10,000.00
	2. Other Farm Income					
A.	Total Receipt				1,000.00	10,000.00
	Operating Costs					
B.	Land Rent	1	Annually	10.00	10.00	100.00
C.	Land Preparation (Plough and Harrow)	1	Per Acre	50.00	50.00	500.00
					60.00	600.00
D.	Labour					
1.	Total labour required	42	Man-days	5.00	210.00	2,100.00
	Sub Total					
E.	Variable Inputs					
1.	Cost of Hybrid Seeds	9	Kg	5.00	45.00	450.00
2.	Compound Fertiliser (NPK 23-10-5)	4	Bags of 50 kg each	40.00	160.00	1,600.00
3.	Post-harvest and marketing cost	25	Bags	3.00	75.00	750.00
4.	Commission on Production for Assoc.	25	Bags	0.50	12.50	125.00
	Sub Total				292.50	2,925.00
F.	Total Operation Cost (B+C+D+E)				562.50	5,625.00
G.	Gross Margin (A-F)				437.50	4,375.00
H.	Fixed Cost and Contingencies					
1.	Depreciation on Fixed Assets					1,000.00
2.	Interest on loan					421.00
3.	Fees and Statutory Taxes					150.00
	Sub Total					1,571.00
I.	Total Expenses (F+H)					7,196.00
J.	Net Profit (A-I)					2,804.00

List of reference sheets

Reference sheet M6/1: From economics to management

Reference sheet M6/2: The decision making process

Reference sheet M6/3: Record keeping

Reference sheet M6/4: Budget and budgeting for agribusiness

Reference sheet M6/5: Cash flow management

Reference sheet M6/6: Revenue/incomes versus cost/expenses

Reference sheet M6/7: Gross margin analysis

Reference sheet M6/8: Gross profit

Reference sheet M6/9: Profitability analysis

Reference sheet 1: From economics to management

Definition of economics based on scarcity and choice

This reference sheet uses definitions taken from the book 'Accounting and Economics' by MAZUMDAR, Debashis and MITRA, J.K., New Age International, 2011, ISBN 978-81-224-3160-5, 732 pp.

Economics based on scarcity and choice was defined by Professor Lionel C. Robbins¹ as: ***“Economics is a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses”***.

This definition is adopted for this module because of its emphasis on scarcity and choice. The key areas of interest are as follows:

- 1. Human wants are unlimited:** The scarcity definition of Economics states that human wants are unlimited. If one want is satisfied, another want crops up. Thus, different wants appear one after another.
- 2. Limited means to satisfy human wants:** Though wants are unlimited, the means for satisfying these wants are limited. The resources needed to satisfy these wants are limited. For example, the money income (per month) required for the satisfaction of wants of an individual is limited. Any resource is considered as scarce if its supply is less than its demand.
- 3. Alternative uses of scarce resources:** Same resource can be devoted to alternative lines of production. Thus, same resource can be used for the satisfaction of different types of human wants. For example, a piece of land can be used for either cultivation, building a dwelling place, or building a factory shed.
- 4. Efficient use of scarce resources:** Since wants are unlimited, these wants are to be ranked in order of priorities. On the basis of such priorities, the scarce resources are to be used in an efficient manner for the satisfaction of these wants.
- 5. Need for choice and optimisation:** Since human wants are unlimited, one has to choose between the most urgent and less urgent wants. Hence, Economics is also called a science of choice. Scarce resources are to be used for the maximum satisfaction (i.e. optimisation) of the most urgent human wants.

Broad scope of economics

The scope of economics entails the identification of basic economic problems before any society and find out different possible ways to solve those problems.

¹ In his book 'Essays on the Nature and Significance of the Economic Science', published in 1932

Economic Problem

The main economic problems faced by every society are:

1. Unlimited human wants
2. Limited availability of resources to satisfy those wants
3. Fulfilment of unlimited wants with limited resources

In any society, human wants are unlimited. If one want is satisfied, a next ones soon appears. For instance, if the *basic needs* of human being (e.g., food, clothing and shelter) are satisfied then some *secondary needs* will appear very soon. These secondary needs may be social needs, i.e., need for attaining a social function, need for fulfilling some social obligations, etc. However, in comparison with this unlimited human wants, the resources required to satisfy such wants remain limited.

Thus, the main problem before any society is to satisfy the unlimited wants with limited resources. Here arises the problem of choice or selection. It implies that every society has to arrange its requirements in order of priority. The society has to satisfy the human wants in order of priority. In Economics, we try to analyse the causes behind these basic economic problems and find out possible ways to solve these problems.

Causes behind economic problems

The main causes behind the economic problems of any society are:

1. Unlimited human wants:

Every human being requires varieties of goods and services for maintaining and improving his or her standard of living. Whenever the basic needs of food, clothing and shelter are fulfilled, people start to feel that they 'want' and 'need' education, book, pen and pencil, eraser, chair, table, television, tape-recorder, CD-player, computer, travel, sports, finer clothes, washing machine, and thousands of such items. In a modern society, these wants are increased further in response to the pressures of fashion and advertising. These wants appear one after another like untiring waves of the sea.

2. Limited resources for satisfying these wants:

Production of various goods and services require resources like land resources, mineral resources, forest resources, physical capital (e.g., machines, factory sheds, etc.) and financial capital, human resources (e.g. skilled man power), etc. However, compared to the unlimited wants for various goods and services, these resources seem to be insufficient. It implies that even if all available resources are fully employed for producing various goods and services, only a small part of human wants can be satisfied. So, scarcity of resources is an important reason behind the economic problem in any society.

Three main economic questions

In recent times, economists have analysed economic systems from a broad perspective. These modern economists talk about three main economic problems: (1) What to produce; (2) How to produce. (3) For whom to produce. In short, these are called the 'What, How and for Whom' questions.

What to produce?

The very first question that any economic system must answer is: What goods and services are to be produced in a society and in what quantities? This question arises from the fact that human wants are *unlimited*, while resources are *limited*. The satisfaction of human wants requires the consumption of goods and services. Human beings, therefore, wish to consume goods and services. But, since resources are limited, the economic system cannot produce *all* types of goods and services. No particular good or service cannot be produced in an infinitely large quantity. Only *finite* amounts of a *limited number* of goods and services can be produced. Therefore, there arises the decision problem. The economy must decide which goods and services to produce and which goods and services to exclude from production.

The economy must *choose* its production plan carefully.

How to produce?

The second basic problem that every economy must solve is that of deciding *how to produce* the goods and services that the economy has decided to produce. A particular quantity of a particular good or service can be produced in many different ways. The economy must choose a particular way of producing the specified amount of the good. This must be done for each of the different goods and services that the economy wants to produce.

Choice of techniques: In the language of the economists, a particular way of producing a particular good or service (or a set of goods and services) is called a *technique of production*. For instance, in some cases, a particular amount of a particular good can be produced by different combinations of inputs. Thus, it may be that 10 tons of wheat can be produced either on 2 hectares of land by 5 agricultural workers or on 4 hectares of land by 2 workers. An economy which has decided to produce 10 tons of wheat must choose between these two techniques. There is a similar problem for each good (or each set of goods). Therefore, the question 'how to produce' is also known as the problem of *choice of techniques*.

For whom to produce?

Suppose that the first two basic problems have been solved, *i.e.*, the economy has decided on the amounts of production of various goods and services and has also chosen the appropriate techniques for producing them. Then still the problem remains of deciding in which way the produced goods and services will be used to satisfy human wants. But among the members of society, who will receive how much of the produced commodities? In other words, after the commodities have been *produced*, there still is the task of deciding how they will be *distributed*. Who will get (to consume) the produced commodities? This is known as the question: '*For whom to produce?*', also known as the *problem of distribution*.

Managerial economics

Managerial economics can be defined as the application of economic theory and methodology to business decision-making practice. More specifically, managerial economics is the use of tools and techniques of economic analysis to solve the problems of decision-

making by the business firms which aim at achieving certain objectives subject to some constraints. Thus, managerial economics shows the process of integrating economic theory with business operations. Hence, it can be regarded as an applied branch of economics. Any business firm wants to make the best use of the economic resources available to it, particularly to maximize its profit or its sales revenue. Hence, business executives (or the managers of different business firms) have to take prudent decisions regarding the production, type of product-mix, purchase of inputs, product-price, etc., keeping in view the targets or definite goals of the business firm. Since future is always uncertain, such tasks of decision making for the future progress of the business firm are really difficult. Managerial economics makes this difficult task a bit easier and systematic.

According to Evan J. Douglas, “*managerial economics is concerned with the application of economic principles and methodologies to the decision-making process within the firm or organisation.*”

Nature of managerial economics

Managerial economics has some special characteristics, and these characteristics indicate the nature of managerial economics. Some of the important characteristic features of managerial economics are noted below:

1. Managerial Economics is Microeconomic in Nature

Economic theories can broadly be divided into two parts, viz., macroeconomics and microeconomics. While macroeconomics is concerned with the economic magnitudes relating to the whole economy (such as national income, national production, etc.) microeconomics is concerned with the decision-making of a single economic entity (such as a business firm) within this system. Since managerial economics deals with the economic problems of individual business firms in an economy, it is microeconomic in nature. However, the firm works within a given macroeconomic environment.

2. Prescriptive in Nature

Managerial economics actually prescribes the ways through which a business firm can achieve its goal within its constraints. It prescribes the policies that should be undertaken by any business firm for achieving its specific target. Hence, managerial economics is not concerned with mere description of economic theories.

3. Pragmatic in its Approach

Managerial economics is pragmatic in its approach because it emphasises on the real-life problems faced by any business firm and their possible solutions, rather than concentrating only on some abstract economic theories (which are based on restrictive assumptions).

4. Emphasises on Quantitative Analysis

Managerial economics is mainly concerned with some of the quantitative aspects of business decisions. Business decisions relating to (i) output to be produced, (ii) inputs to be used, (iii) prices to be fixed, (iv) estimated cost and revenue schedules, etc., are expressed in quantitative terms. Some of the qualitative aspects of production such as efficiency of labour or the efficiency of factor inputs are also estimated in quantitative terms. For instance, average productivity of the workers can be estimated to reflect their efficiency.

Reference sheet 2: The decision-making process

This Reference sheet uses definitions taken from the book '*Financial Management for Agribusiness*' by Wesley J. Obst, Rob Graham and Graham Christie, Landlinks Press, 2007, ISBN: 9780643092952, 352 pp.

Agribusiness actors continually make decisions and it is the role of coaches to support them in doing so. The steps taken in the decision-making process are summarized as:

First Step – Set objectives to reflect both business and family needs

In order to improve management, it is important to understand the expectations and objectives of agribusiness people and their families. Actors in agribusiness tend to have a number of objectives that guide their choices between alternative actions.

Some of these are:

- Maximising profits
- Increasing production and actual sales
- Increasing effort and improving yield per unit Area
- Minimising costs
- Avoiding debt
- Achieving a 'satisfactory' standard of living
- Reducing the risks associated with agriculture especially in developing countries
- Transferring the business to the next generation
- Ensuring stable food supplies for the family

Agricultural practitioners often have multiple objectives and some may even conflict. Nevertheless, an important common objective for market-oriented production is profit. Remember that in the long term, profit must be sufficient to cover family expenses and production costs related to the agriculture business.

Second Step – Identify the problem and collect data/information

The second stage of the process is to recognize the existence and nature of the problem that needs to be overcome that confronts the business unit. This stage calls for the collection of data on current performance as the basis for making improvements to the business operations. For example, data could be collected to analyse performance in comparison to other similar producing/processing enterprises in the vicinity. The problems identified may be due to the use of obsolete or inappropriate production or processing techniques, failure to employ new technologies, constraints on marketing, and limited alternative market channels.

Third Step – Identify and analyse alternative solutions

Possible solutions to the identified problems may include using more yield- increasing inputs and materials, and introducing improved or efficient labour and pest management methods, among others. The consequences of the alternative actions would be evaluated to assess their likely impact on the performance of agribusiness, taking into consideration the resources available to the operator to implement the desired line of action.

Forth Step – Make the decision and adopt the best alternative

This step is concerned with which alternative is most likely to improve performance? Since it is rare that all the information required in making a decision would be available, selection often requires judgment by the operator before a decision is made. The final decision, therefore, will frequently reflect the operators' attitude towards risk and, more specifically, the perceived risks of each of the alternatives.

Fifth Step – Implement the decision

Managers of agribusiness have a role in implementing decisions and enforcing the action needed to ensure that the decisions are followed. In a small farming enterprise very often different members of the family undertake the planning and implementation tasks.

Sixth Step – Follow-up

Once the first five (5) steps have been completed, it is useful to review the results of the decisions taken. Having identified the changes made, it is important to contribute to continue monitoring progress to ensure that new plans are being followed and that revised targets are being achieved.

There are three different time horizons within which decisions are taken in agribusiness. These are:

a) Short-term: These decisions are concerned with the daily organization for the operations of the agribusiness such as maintenance and servicing of tools and equipment, acquisition and supplies procurement (seeds/planting materials, water, food, fuel and lubricants), checking equipment, harvesting/storage, disposal of products (direct selling, processing, or storage). They also involve record keeping, land and environmental protection, choice of site for production or processing, and timing of activities. In brief, short-term decisions are to achieve short-term or immediate goals that the business wants to achieve within a one-year period.

b) Medium-term: These decisions are concerned with the annual organisation of the business, e.g. preparing the action plan, deciding on the amount of labour to use and whether to introduce new technologies, equipment, and techniques, improve storage capacity, and adopt new safety and conservation practices and technologies. Usually, intermediate **or medium-term objectives** are those goals that the business would like to achieve within 2 to 5 year period.

c) Long-term: These decisions relate to the long-term nature of the business, e.g. whether or not to expand the enterprise through including additional enterprises, vertical integration, either forward or backward; and whether or not to invest in new mechanization, land development e.g. irrigation, and/ or purchase of new technology and equipment. **Long-term objectives** are goals that the business usually plans to be achieved within a five to ten-year period or more.

It must also be noted that short-term decisions are operational in nature, while medium and long-term decisions are concerned with capital investments.

Reference sheet 3: Record-keeping

Business records are financial and production information of the business that can be stored for future and immediate use. They can be stored in several ways:

- In the operator's head, that is, committed to memory
- In a computer, using a financial management software package
- In written journals or record books

Most agribusiness practitioners especially farmers commit records to memory. This is the worst place to keep farm record for a variety of reasons:

- When records are not written down or documented but committed only to memory, people often forget crucial information that might be needed to solve their business problem.
- Lenders and financial institutions will not take people who do not have records that are documented but provide information on production, income, and profit estimates based on memory, serious.
- Credible business taxes cannot be properly computed without written or documented records. Where such records are absent, tax assessors are compelled to make their own best estimate of taxes to be paid. In many of such cases, estimates may lead to the tax payer paying a higher tax rate.
- Without good written or documented records, disputes may arise concerning both debts owed to the business and debts the business owes to others.
- If the owner of the business is ill or has an emergency, and needs to leave the business for a period of time or dies, the successor may not have historical records to be able to continue the business.
- Record keeping is also important as an instrument to analyse the performance of the business, to see whether the resources committed are optimally used.

The best way to store business records is by using a computer with the appropriate financial management software packages. By entering production and financial information into a computer, the farmer can automatically generate reports, financial statements for lenders, and develop "what if" scenarios ("What if I plant onions instead of tomatoes? How much will I earn?", or: "What if I plant one half hectares to onions and one half hectare to tomatoes? How much will I earn?").

The disadvantages of using a computer are the cost of the computer, printer, and software, the cost of training needed to learn to properly use the computer and software, and the time required to learn to properly handle a computer.

For most businesses, writing or documenting records are the best way to maintain a good record keeping system. This is because it will assist the business to accurately:

- store and retrieve historical production and financial information on the business activities;
- forecast future activities and income based on past information regarding production, processing, marketing and income;
- always have the records available for future use.

Why keep business records?

Thoroughly understanding your financial performance is critical for the farmer/businessman in today's competitive agricultural environment. Accurate record and financial statements are the foundation materials required to analyse the financial condition of your business and trends in the operation.

Essentially, accurate written records are required:

- **To monitor and evaluate the progress of the business**
How much money have you spent, and how much money have you earned? Is your business showing a profit? Is your business improving from year to year? Which products are making profit, and which are not? What changes can be made to improve profit margins? The principal aim of any record keeping system is to show a picture of the state of the business. This allows for recognition of achievements in terms of profits received, as well as the costs and resources that contributed to the achievements. Comparing one business' records with others in the same business can tell how well you are doing compared with what is possible. Such comparisons can assess areas where performances can be improved, to increase income from the business activities.
- **To increase the likelihood of business success**
Keeping good records allows for quick identification of challenging areas (or potential problem areas) in the business. This allows for corrective measures to be taken before the situation becomes critical. In other words, good records allow the operator to make informed decisions in solving business problems.
- **To provide an historical record on the progress of your farming activities**
Armed with these records, people are in a much better position to make decisions on their businesses whether they are temporarily away on an emergency, or in the event of death.
- **To forecast future earnings and conditions**
No one knows for sure what the future may bring. Having proper, accurate records, however, will allow to better predict what conditions will exist in the future as you prepare the business plans.
- **To prepare financial statements**
You need good records to prepare accurate financial statements. These financial statements are necessary when seeking for loans from a bank or another financing institution.
- **To identify sources of receipts and expenditures**
Money may flow to the business from many sources and payments may also be made to many sources. Good records allow to identify both sources of revenue and expenses. They also allow for identification of creditors (those you owe money to) and debtors (those who owe money to you).
- **To prepare your tax returns**
At some point in the future, profits from farming activities may need to be taxed. Accurate records will be necessary to keep track of deductible expenses and to prepare the tax returns.

Types of records to keep for agribusiness

The type of records each business requires depends on the nature of the business and on the type of information to be analysed for decision-making. In agribusiness, accurate farm records are therefore essential tools in the planning and management functions of the operator. The types of records that are likely to be required by an agribusiness as an entity include the following:

1. Cash book or cash register
2. Bank transaction records
3. Sales records
4. Field activities records
5. Debtors or receivable records
6. Creditors or payable records
7. Assets inventory records
8. Financial records (extracted Made up of the financial statement and Balance sheet)

These records and other designed ones can be kept in a variety of forms, with different degrees of sophistication. This reference material provides some of the simplified record keeping samples that can assist cluster actors in the management of their agribusinesses and they are as follows:

1. The cash book or the cash register

It is the book in which all the cash/monies that come to the business (income) and all cash/monies going out of the business (expenditure) are recorded. The major source of income to most agribusinesses is the sales made, while the major expenses may include payment of salaries, wages and allowances, purchase of inputs, payment for services like transport, electricity, water, rent, and repair of equipment (buildings, vehicles etc.)

Important information that the cash book should contain include are the date on which money is received or paid, a brief description of the transactions carried out, the amount received or the amount that went out of the business through cash payment, and the total amount of money received or disbursed at the end of the period – known as the balance.

An example of cash book entry is shown in the following table:

Cash Book

No.	Date	Transaction	Income (\$)	Expenditure (\$)	Balance (\$)	Remark
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Points to note on the use of cashbooks:

- i. Entries into the cash book must be done soon after the transactions have taken place.
- ii. Ideally, cash transactions should be accompanied by receipts, invoices or also entered in the ledgers that generated the transaction.
- iii. Balances at the end of the transaction as well as at the end of the period e.g. daily, weekly, monthly etc., must be clearly shown. Balances will increase if the transaction is income and will decrease when expenditure is made.
- iv. The transaction should be recorded in the appropriate column; e.g., income should be recorded in the income column and expenditure should be recorded in the expenditure column.
- v. Take note of the currency in which the transaction is made. There should be either a separate cashbook for separate currencies or all foreign currencies should be converted at the ruling rate and record in the cash book of preferred currency. Never mix units of currency in the same cashbook.

2. Bank transactions or cheques register

It is obvious that some of the businesses financial dealings may be done with cheques with payments made through the banks. These transactions may represent income or expenses to the business just as cash will do. Detail records need to be kept on these transactions as well and this is done using the Bank Transactions book or Cheque register.

An example of how this can appear is shown in the next table:

Bank Register

No.	Date	Transaction	Bank	Cheque #	Income (\$)	Expenditure (\$)	Balance (\$)	Remark
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Points to note on the use of cheques:

- i. Most of the principles about using cheques remain the same as a Daily cash book. All income and expenditure made through the banks should be recorded in the appropriate columns. Expenses reduce bank balances of the business account while cheque payments for income from other sources increase the bank balance.
- ii. The Bank register has other columns introduced to take note of the banks from which the incomes are received and the cheque numbers. Here too, depending on the size of your

operation, you can maintain only one cheque register at a time for all transactions or open separate transaction for the different banks you deal with.

- iii. Entries into the cheque book must be done soon after the transactions has taken place. But know that cheques paid from different banks may take some time to be cleared before the amount can reflect in the account.
- iv. Show the balances at the end of the transaction as well as at the end of the period e.g. daily, weekly, monthly etc. must be clearly shown. Balances will increase if the transaction is income and will decrease when expenditure is made.
- v. Take note of the currency in which the transaction is made. There should either be a separate chequebook in that currency or convert it at the ruling exchange rate and record in the cheque book of preferred currency. Never mix units of currency in the same cheque book.
- vi. Collect bank statements frequently from your bankers to compare with your recordings in the Cheque Register.

NOTE: These days, there are other several ways through which payments can be made and without direct cash or bank transactions. Some of these are through telecommunication networks, etc. Whatever means are used, there should be an appropriate record for such payments and receivables.

3. Sales records

This is the records kept on amounts received from businesses products sold. The sales record

is used to list each sale that is used in a particular period (e.g. daily, weekly, monthly, annually etc.). Important item to include are; the date the sale was made, the name of the buyer i.e. customer, the item sold, the quantity of the item sold, the price per unit (kilo, bags, tons, litres etc.) of the item sold, and the total sales price.

All sales made, no matter how small, should be recorded, including sales made on credit. It is a very easy form to use, and should not take more than a few minutes each day to complete. Business selling multiple products (e.g. maize, soybean, onions, cabbages, etc.) might want to use separate record for each product.

At the end of each period, you should add up all the total sales for the period for each product. The sales figures for each crop for the month should then be entered into the “Actual Cash-Flow Statement” as the actual income of each product for that month. A sample of this record can be found below:

Sales Records

Date	Item Sold / Description	Sold to / Customer	Quantity	Unit price (\$)	Total Sale (\$)	Remark
TOTAL FOR PERIOD			Total Qty Sold		Total Sale in (\$)	

4. Expenditure records

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Expenditure records are used to record all expenditures made by the business, no matter how small or how large the expenses are. With small family businesses, it is necessary to include household expenses, such as purchases of food, clothing, school fees, and pocket money given to children, gifts, fuel, medicals, and any and ALL purchases made for household use from the business income. Like all records, expenditure records should be completed immediately as they occur or better still at the end of each day. The next table is a sample of a very simple expenditure record form to complete.

Expenditure record chart

Date	Item (Goods or Service)	Source of Supply	Quantity	Unit Price(\$)	Total Cost (\$)	Remarks
TOTAL DURING PERIOD			Total Qty sold		Total Cost in (\$)	

5. Field activities or operational records

The daily field activity record allow for organising and monitoring field activities. The operational records serve the daily needs of agribusiness in managing their operations and are designed to control specific activities. A series of tables can be used for collecting such operations data. Some of the most common operational records include: input records, labour records, production records, marketing records, etc. The simple chart for vegetable enterprises below can be used for this purpose.

Simple chart for vegetable enterprises

Date	Enterprise	Plot #	Activities	Responsibility	Cost Involved (\$)	Remarks
			Slashing Ploughing Harrowing			
			Nursing of Seeds Soil sterilisation Chemical spraying			
			Transplanting Irrigation Staking Fertilizer Application Pest Control			
			Harvesting Grading Packaging Marketing			

6. Debtors/receivable records:

The Debtors/Receivables record is used to list all sales made on credit. Sometimes you do not receive immediate payment for sales made. Whenever credit is extended to a buyer, that credit sale should be entered into the Debtors/Receivables record.

The Debtors/Receivables records shows the date of the sale, the name of the customer, the item purchased, the quantity purchased, the purchase price, and the date payment is due. It is highly recommended that you have the customer sign against what he/she owes.

Often, when sales are made on credit, disagreements or disputes arise when payment is due. Having an accurate Debtors’ record with the customer’s signature will usually settle any credit dispute.

Debtors/Receivable record chart

Date	Name of Debtor	Item Sold to Debtor	Qty	Unit Price (\$)	Total Amt Owed	Payment Due Date	Date Paid
TOTAL							

7. Creditors/accounts payable record

The Creditors/ Account payables record lists all items purchased on credit. In some cases, some items such as seeds or other inputs may be bought on credit from the supplier. At other times, you may borrow supplies or cash from another source. Whenever anything is received on credit, it should be listed in the Creditors/Account Payables records.

The form is very similar to the Debtor/ Receivables records. It lists the date you receive the credit, the name of the company or person who provides the credit, the item, the quantity, the purchase price, and the date the payment is due.

Creditors/ Accounts Payable Record Chart

Date	Name of Creditor	Item Bought from Creditor	Qty	Unit Price (\$)	Total Amt. Owe	Payment Due Date	Date Paid
TOTAL							

8. Assets/inventory record

The Asset Register is a listing of all of the properties owned by the business. This includes all farm machinery, vehicles, land, buildings, and other constructions. The Asset Register has three main functions:

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- It provides the operator with a ready list of assets which can be used as collateral when applying for business loans.
- It provides the basis for depreciation of assets for tax and replacement purposes.
- It provides the owner with “proof of ownership” in the event any equipment is stolen and, subsequently recovered.
- In modern business financing, some donors require counterpart funding and the asset register can easily show what the business can contribute.

Having an accurate asset register is essential in developing the financial statements that lenders require. When applying for business loans, most lenders will want to review three items, namely:

- The Income or Profit and Loss Statement, which details the net profit (or loss) for the past few years.
- The Projected Cash-Flow Statement for the upcoming year. (Some may also want to see both the projected and actual cash-flow statements for the past years).
- The Balance Sheet or Net Worth Statement, which shows what the business own and what is owed to the business.

Having accurate Asset Registers is crucial in developing the Balance Sheet or Net Worth Statement. For large businesses, it is recommended that the Asset Register lists different classes of assets separately, e.g. machinery owned, buildings and constructions, land, office equipment and other inventories.

It is also to be noted that, with the exception of land, assets depreciate with time.

Below are some examples of asset inventories:

Asset record for farm / office equipment and vehicles

Asset (Description / Make)	Date of Purchase	Date/Year of Manufacture	Serial / Identifica- tion#	Purchased Price	Current Value (Purchase Price – Depreciation)	Remarks
TOTAL IN US\$						

Asset record for land and buildings

Asset (Description of Land/ Building)	Date of Purchase or completion	Size (Ha) / Hse #	Location/ Address	Purchased Price	Current Value	Depreciation/ Appreciation	Remarks
TOTAL IN US\$							

Asset register – Inventory of inputs and stock of produce

Assets / Description (For Example)	Unit of Measure	Beginning of Period (season/Year)			End of Period (Season/Year)			Change in Inventory (C8-C5)
		Qty	Unit Price	Total Value	Qty	Unit Price	Total Value	
Inputs:								
Seeds								
Fertilizer								
Chemicals								
Spare Parts								
Fuel&Lubrific.								
Etc.								
TOTAL VALUE OF INPUTS								
Produce:								
Maize								
Soybean								
Rice (Paddy)								
Rice (Milled)								
Yellow Maize								
Etc.								
TOTAL VALUE OF PRODUCE								

9. Financial records

Proper keeping and maintenance of the records will facilitate the preparation of financial statements and the monitoring of farm/business performance. Properly prepared Income Statements, Balance Sheets, and Cash-Flow Statements are needed to keep the business on track by comparing actual performance to your plan and taking action when it is needed. It is noted that many agribusinesses have failed in keeping good records and waits until it is too late before the farmer will recognise a problem and begin to take corrective actions. High among any business goals are profitability, liquidity, solvency, and efficiency. However, many agribusiness men are found to be very capable in the technical and production aspects of their business, but are completely in the dark when it comes to measuring business status and performance.

MODULE 6

Economics Analysis and Crop Budgeting

To be an effective agribusiness manager, there is the need to be able to determine the financial position and performance of the business at any time. You must be able to evaluate where your business has been, and where it is going. The basic tools needed to conduct agribusiness analysis are therefore adequately kept records and properly prepared financial statements.

The most useful coordinated financial statements to use in summarizing the financial position of the business are the **Income Statement (Profit and Loss Statement)**, the **Balance Sheet**, and the **Projected Cash-Flow Statement**. To be most useful, these statements should be compared over several years to evaluate whether the business is progressing, stagnant, or even retrogressing. If you do not have the financial statements from previous years, there is no better time to start preparing them than now.

A. Income Statement or Profit and Loss Statement

The Income Statement, also known as the Profit and Loss Statement, shows whether or not the business has made a profit over a period of time, usually from the beginning to the end of the year or during the business/production cycle that may cover a season.

To complete the Income Statement, take the completed Actual Cash-Flow Statement and add up all the sales of farm produce for the year/period. Be sure to add ONLY sales of produce. DO NOT include non-farm income, loans, or starting cash. The total sum of sales of produce for the year/period should be placed in the block at the top (for example in the table below) that says "Total Sales."

Next is to list each expense that was incurred during the year/period and place the amount of the expense in the corresponding block. In the last block, use the asset registers to compute the total amount of depreciation for the year. Depreciation is an expense, and must be listed as an expense in the Income Statement. See the next table:

Income Statement (Profit/Loss Statement) for the period January 1, 20.....to December 31, 20....

Income						
	<i>Crop 1</i>	<i>Crop 2</i>	<i>Crop 3</i>	<i>Crop 4</i>	<i>Others</i>	<i>Total</i>
	<i>Soybean</i>	<i>Vegetable</i>	<i>Maize</i>	<i>Rice</i>		
1. Income						

Expenses						
	<i>Crop 1</i>	<i>Crop 2</i>	<i>Crop 3</i>	<i>Crop 4</i>	<i>Others</i>	<i>Total</i>
	<i>Soybean</i>	<i>Vegetable</i>	<i>Maize</i>	<i>Rice</i>		
Land Rent						
Irrigation /Water Fees						
Seeds/planting materials						

Fertilizer						
Pesticides						
Labour (Fert. applic.)						
Labour (Spraying)						
Labour (Weed control)						
Labour (Harvesting)						
Labour (Others)						
Packing Materials						
Electricity						
Fuel and lubricants						
Household Expenses						
Depreciation						
2.Total Expenses						
3. Net Profit						

B. The Balance Sheet

The **Balance Sheet**, also referred to as the **Net Worth Statement**, is a summary of all the assets and liabilities (debts) of your farming business at a specific point in time. It is commonly referred to as a picture of the financial position, listing the assets, liabilities, and net Worth:

$$\text{Assets} - \text{Liabilities} = \text{Net Worth}$$

As a norm, a Balance Sheet should be prepared as of the last day of the fiscal year.

Generally speaking, the assets are items of value that are owned by the business. In the balance sheet, these assets are divided into two types, namely:

- **Current Assets:** Cash or other assets that can be readily turned into cash. These assets include cash on hand, cash in bank, monies receivables (monies owed by debtors), inventory of both supplies and stock of produce, crops in the field, i.e. the value of crops which you have planted but have not yet harvested (the market value of the anticipated harvest), poultry and/or livestock which are available for sale (the market value of the poultry or livestock), etc.
- **Long Term or Fixed Assets:** Assets with a useful life of more than one year. These assets include equipment and machinery; vehicles, buildings and constructions, land, breeding/dairy livestock, orchard trees, etc.

The Total Assets are the value of the current assets plus the value of the long-term assets minus accumulated depreciation. That is:

$$\text{Total Assets} = \text{Current Assets} + \text{Long Term Assets} - \text{Accumulated Depreciation}$$

The second part of the Balance sheet consists of the Liabilities of the business. That is monies the business owe to others. The Liabilities are also separated into Current Liabilities and Long-term liabilities.

- **Current (or Short-term) Liabilities:** They include the debts that are due within one year. They may include Loans and Accounts Payable that have not been paid, Taxes, e.g. land rent and other taxes that have to be paid in the coming year, interest payment on any long-term loan that have to be paid within the year, etc.
- **Fixed (Long-term) Liabilities** are debts that are due over more than one year. These include principals of loans from banks or others that are more than one year in duration.

The balance sheet is one of a number of financial statements that summarize the assets used by the enterprise and the financial resources invested in these assets at a given point in time.

The main principle of the balance sheet is that total assets and total liabilities always have to balance. Assets tell where the property of the enterprise is, and liabilities tell where the money is received. The difference between assets and liabilities represents the net worth.

A balance sheet does not necessary "value" a company, since assets and liabilities are shown at "**historical cost**" and some intangible assets (e.g. brands, quality of management, market leadership) are not included.

The balance sheet therefore provides a picture of **solvency**. If liabilities exceed assets, the net worth is negative and the enterprise is insolvent. Due to changes in net worth, balance sheets prepared at different stages of the annual operating cycle cannot be compared directly. A sample of a balance sheet is shown below:

Balance Sheet of XYZ Agribusiness Company Ltd. as at 31st December, 20.....

ASSETS		LIABILITIES	
Long-Term Liabilities	US\$	Fixed Assets	US\$
Bank Loan	120,095.00	Farm lands and developments	85,095.00
		Machinery and Equipment	25,000.00
		Other Non-business Assets	130,000.00
Total Long Term Liabilities	120,095.00	Total Fixed Assets	240,095.00
Current Liabilities		Current Assets	
Bank overdraft	1,000.79	Cash in Bank	13,000.00
Sundry Creditors	12,540.00	Debtors	28,062.70
Short-term Loans	7,366.85	Stock of produce	800.00
		Crops on field	12,000.00
Total Current Liabilities	20,907.64	Total Current Asset	293,957.70
TOTAL LIABILITIES	141,002.64	TOTAL ASSETS	293,957.70
NET WORTH (Assets – Liabilities)	152,955.06		
BALANCE	293,957.70	BALANCE	293,957.70

In the example above, the balance sheet shows how the Net Worth when added to Total Liabilities equals Total Assets. The result shows:

- i. **Liquidity or Working Capital:** the cash leftover after the current assets have been sold and the current liabilities have been paid off;
- ii. **Solvency:** the ability to repay debts;
- iii. **Net Worth:** the owner's share of the enterprise. This shows the difference between the value of the total assets owned by the business and the value of their liabilities. In other words it is the residual value to the owner if the fishing enterprise were sold and all liabilities paid. It represents the total equity owned. Net worth is calculated as follows:

$$\text{Net Worth} = \text{Total Assets} - \text{Total Liabilities}$$

Reference sheet 4: Budget and budgeting for agribusiness

Agribusiness management has become more difficult and challenging as a result of rapidly changing production and economic conditions. A good manager needs to adopt a plan for the future, and one of the tools available is making a budget. All budgets start with a planning session on paper.

Why develop budgets?

Budgets help you to organize financially and physically. You can compare costs and returns of alternative plans of action and enterprises for the agribusiness.

You should then be able to choose a course of action that most nearly matches your long-term goals. The following are therefore some of the reasons why agribusiness people need to develop budgets:

- Farm budgeting helps farmers to think more accurately and to plan more intelligently and carefully.
- It assists in selecting factors of production more wisely.
- A written plan expressed in budgets makes a good impression on other people.
- A budget helps the farm manager to know when there will be the need for him/her to borrow money for his/her activities.
- A budget forces the identification of items of cost that are frequently overlooked.
- A budget helps in saving money, as it is much cheaper to make mistakes on paper than in real business.

Types of Budgets

There are various types of budgets that can be prepared to achieve specific purposes. Some of them are narrated below:

1. Whole or Total or Complete Farm Budget

This is a detailed listing of resources of the entire agribusiness along with a plan to use these resources to achieve long-term goals. The whole or complete budget sets the direction the business will take and helps the manager achieve long-term goals.

A complete agribusiness budget entails the costing of a plan (including all farming operations for the year), with the aim of creating a viable income. The complete budget would include the keeping of a cash book and an income statement, while the Net income and Net profit made annually is reflected on the financial statements.

2. Enterprise Budget

The Enterprise budget is a physical and financial plan for a specific crop or livestock enterprise. The enterprise budget estimates expenses and receipts for a specified period of time, using a specified set of production practices for that particular enterprise.

3. Partial Budget

The partial budget helps the manager to evaluate the economic effect of minor adjustments in some portion of the business. Many aspects of business are fixed and have fixed costs, in the short run. Partial budgets are used to evaluate changes in resources use that are not fixed or have variable costs.

4. The Cash Flow Budget

This budget deals with cash movement within the business. It helps in establishing the cash needs of the business over a specified planning period, usually a year. Furthermore, the cash flow budget helps to plan repayment of existing loan obligations. They help determine the repayment ability of new operating loans or longer-term loans and establish the cash feasibility of a major capital purchase.

5. Family Living Expenditure Budget

This budget can be considered an enterprise and be incorporated into the entire farm budget, or be evaluated separately from the business. This is due to the fact that expenses incurred by families or households have effects on the running capacities of the business, especially in small-scale family businesses.

Budget procedure to estimate returns

The objective of working out budgets is to project the business into the future and observe what will happen. Budget preparation involves the specification of inputs and outputs associated with each task of the cropping calendar. Outputs are placed in a single category. Inputs are classified into fixed, direct labour, and intermediate inputs. Fixed inputs include only the capital equipment owned by the operator of the business activity. Direct labour inputs requirement of both family and hired workers are well considered and planned for, with their costs.

The steps to follow in the preparation of the budget are as follows:

- 1. Estimate the annual total production:** This is done by using average yield or production rates expected for each crop/enterprise, and each class of livestock during the period. Any unusually low or high yield of production that is expected to occur should be recognized and used in estimating for the average.
- 2. Estimate the price that will be received over the period:** A good practice is to be on the conservative side in estimating the price, as a means of ensuring against over-estimating income.
- 3. Compute the estimated annual gross income:** You can do this by multiplying the forecast price by the estimated output for each enterprise to be included.
- 4. Estimate the average farm operating cost for the period:** In doing this, costs estimated might well be on the higher side to create room for any price hike that might occur during the period, so that your budgeted cost for inputs does not deviate too much from the actual cost.

- 5. Compute the net cash farm income:** This is done by deducting cash expenses/ operating cost from the gross income.
- 6. Compute the net farm income:** Do this by adjusting for net cash income that represents changes in inventory during the period. These changes may include depreciation of fixed assets.

The Net Farm Income figures arrived at by the budget method are the results of yields from production, output prices and costs of inputs. If there have been unrealistic estimates for income, results that will be generated from the budget will be unrealistic and provide wrong information for judgments and decision-making.

Budgets should therefore be built upon the most reliable data that is available. The amount of particular inputs or outputs associated with the farm activity must be consistent with the choice of farm-level, usually a unit of area (acres or hectares, for example) or, in the case of animal production systems, a specified herd size.

Caution for estimating prices for inputs and outputs

For inputs and outputs that are identified in quantitative terms, unit prices represent the final ingredient necessary for the formulation of the budget. All prices need to be standardized to a common time period. When prices are not from the existing time period, they can be computed from available data by applying an inflation adjustment. Prices must also be standardized for locations.

To calculate the farm-level profitability of the activity, farm-gate prices or price equivalents are the relevant values. For intermediate inputs, prices therefore must include marketing costs incurred in delivering them to their final location. For example, for the cost of fertilizer you do not use the ex-factory price but the ex-factory price plus the costs of marketing that delivers the fertilizer to the farm gate. Outputs should be valued similarly – not with the price in some consumer centre but with a price or price equivalent that represents the ex-farm-gate value.

Reference sheet 5: Cash flow management

The cash flow guides decision makers in assessing whether the enterprise is able to generate a cash surplus or incur a cash deficit and to find the time of the year in which additional financial resources may be required most.

The concept of cash flow is simply the flow of money into the business from sales, and the flow of money out of the business in the form of purchases. The difference between the inflows and the outflows is known as **Net Cash Flow**. That is:

$$\text{Cash Inflows} - \text{Cash Outflows} = \text{Net Cash Flow}$$

For a business to operate in the medium to long term, it must generate a positive cash flow. More cash must flow into the business than flow out of it.

Cash flow analysis

A cash flow is a tool that has application for both ongoing analysis and forward planning of business. Cash transactions therefore frequently occur as an important task for managers.

Liquidity

Liquidity is the ability of the business to generate enough cash to meet its financial obligations as they come due, without disrupting the normal operation of the enterprise.

Cash flows into the agribusinesses from various sources with the major one being the sale of crops and livestock. Others may be the sale of capital assets, mobilisation of loans and non-enterprise income sources.

Such monies flowing in are used by the managers to cover their businesses as well as their family expenses. These may include items such as production costs, capital expenditures, loan repayments, and family living expenditures. A reserve of cash or liquidity needs to be kept to prevent cash shortages from disrupting the normal enterprise operations. Several factors can affect the liquidity position of the business and some of them are listed below as:

- The production cycle for agricultural goods is based on when planting is done to determine when harvesting and marketing can be done before cash can be realized. It takes few weeks (in vegetables, cereals and legumes) to several years (in tree crops) to realize income. This means that the farmer often has to make regular (daily, weekly, monthly etc.) payments for inputs used to sustain the growing period (seeds, pesticides, labour, fuel, salary etc.).
- Farmers often realised that for most crops it may be better not to sell outputs soon after harvest, but rather to store or add value for some time in order to attract higher prices. This also has an effect on the cash flow by delaying cash inflows from product sales.
- Buyers involved in purchasing output from farmers very often do not pay for it immediately. It may take some periods of credit, even running into years, before some of these sales are paid for.

- For some agribusinesses (e.g. poultry) the availability of cash over the short term may even be more important than generating additional profits. Poultry farmers may therefore sell some of their productive assets to generate cash to pay feed and drugs for their birds in stock.

It is clear that agribusiness managers may need access to working capital and short-term credits. Flexible lending facilities are required to advance cash that is needed during the production cycle and can be repaid when outputs are sold.

Cash inflows

Various sources from which cash may flow to the agribusiness are as follows:

Sales of outputs and other by-products are the primary sources of cash for most agribusinesses and are critical to maintain the business liquidity reserve. Some enterprises such as poultry, dairy cows, and processing, may generate a relatively even flow of cash over a certain period of the year. Other enterprises such as grains, fruit and livestock (meat production), however, result in irregular seasonal cash inflows over the production period.

Other enterprise income sources sometimes constitute a substantial cash inflow to the enterprise. A typical item includes income generated from work performed for others, e.g. using the tractor of the company to work for other farmers at the time the business is not using it.

Non-enterprise income sources include income from off-enterprise employment, cash inflows from savings, interest earned on investments, and financial gifts.

Sales of capital assets can bring in irregular inflows of cash, e.g. from the sale of land, buildings, machinery, livestock, and other capital items.

Borrowed money is also a source of cash, often used to maintain liquidity when cash outflows exceed inflows. Borrowed money takes the form of short-term loans to cover operating costs and longer-term loans for the purchase of assets such as equipment, new technology, and fleet expansion of the business.

Cash Outflows

Cash outflow from the agribusiness may occur in the following way:

1. Operational costs constitute a relatively large draw on the liquidity reserve. These costs include payments of seeds, crop protection products, food, hired labour, repairs and others. If a manager fails to maintain a liquidity reserve to meet these costs, the output may immediately drop or the farm may completely go out of production and the business can go bankrupt.

2. Capital Expenditures: These are cash outlays for replacing or adding machinery and equipment, breeding livestock, and purchasing land and buildings. These expenditures are important for increasing and maintaining enterprise growth. The cash outflows are not frequent and can be planned for, but often involve large amounts of money. To meet these expenditures, there is a need to ensure that the liquidity reserve is adequate.

3. Loan payments: These are repayment for monies borrowed at a time that cash outflow from non-borrowed sources exceed cash inflows. Repayments consist of both principal and interest. It may also involve payment of penalties when repayment is not done on the due date.

4. Family Living Expenditures: Many agribusiness people, especially small-scale farmers, when assessing their liquidity reserves, very often overlook expenses incurred on their families from the business. Certain basic family living expenses must be covered because money allocated to other uses in the enterprise sometimes find their ways into the family budget.

Practical application of cash flow

Agribusiness managers should be aware of the cash flow situation of their businesses. This is necessary to ensure that cash is available to cover expenses whenever needed. In practice, cash flow can be used:

a) To Monitor Liquidity

The cash flow records the timing and size of the cash inflows and outflows that occur over a given period, usually one year. The year is broken down into shorter periods of months or quarters. A projected cash flow could be completed at the beginning of the year and estimates of the expected cash inflows and outflows over the period made. This is done to assess the liquidity reserve or cash balance.

A cash flow of actual cash transactions could be recorded as they take place over the year. The actual cash flow can be compared with the projected cash flow as a way of monitoring the plan, devising solutions to challenges, and taking advantage of opportunities that occur.

b) For Enterprise Planning and Management

The actual cash flow is compared with the projected cash flow to improve the performance of the enterprise. The actual cash flow from one year can be used to project the cash flow for the next year. In this way, owners will know the periods that are critical for cash outflows so that they plan to have cash reserves available and will not be overwhelmed with cash shortfalls.

Reference sheet 6: Revenue/income versus cost/expense (fixed and variable)

Revenue and income are often used interchangeably to denote gaining for an establishment or organisation. There is a thin line distinguishing the two.

Revenue

As a way of definition, revenues or revenue in business is the gross income received by an entity from its normal business activities before any expenses have been deducted. While revenue is the gross income received from the normal operations of a business, there are other revenues known as Non-Operating Revenues. These are revenues received from the non-core operations of a business. This could be the profit on the sale of equipment used by the business to generate sales, or may be the interest income earned from monies kept in the bank.

Features of Revenue

The main features of revenue are detailed below:

- revenue arises from the normal trading activities of a business
- revenue eventually creates an inflow of funds into the business
- revenue is measured in monetary terms
- revenue must be allocated to a particular accounting period
- revenue is earned as a result of revenue generating activities typically expressed as expenses

Other terms that are used in place of revenue are “Sales” or “Turnover” or “Top line”. Two major types of revenue are identified. These are “cash” and “non-cash” revenue.

Cash revenue is income that is received in cash form. For example, wages earned, cash sales of goods (livestock, crops), or cash received in exchange for services provided.

Non-cash revenue is income for a business in the form of inventory or investments in which no actual cash is received. Examples of non-cash revenue are capital gains on investments, increases in accounts receivable, or improvements that would increase the change in inventory.

Income

The term “Income” on the other hand is used to refer to “money that an individual or business receives in exchange for providing a good or service or through investing capital and consumed to fuel day-to-day expenses”. Income may be received as cash or cash equivalent and is typically generated from the sale of goods or the rendering of services for a particular period of time.

Two types of income are identified. These are incomes realised from:

- a. **Sale Revenues:** Revenues earned through the ordinary course of business activities of the entity.
- b. **Gains:** Income that does not arise from the core operations of the entity. For instance, the sale revenue of an agribusiness whose main activity is to produce and sell grains generates its revenue from selling grains. If the farm sells one of its tractors, income from that transaction would be classified as a gain rather than sale revenue. Other examples of gains that can be derived by agribusiness include; Interest received on a bank deposit, dividend earned on company's investments, rentals received on property leased by the company and gains on re-valuation of company assets.

Gross Income

Gross Income is the value of the output of an enterprise. The gross income is obtained by multiplying the physical output by the market price at the time of sale. Gross income is computed to include value of the output that is also consumed at home or given out as gifts etc.

Since the activities of some businesses overlaps with different accounting years or periods, Gross income for such businesses are defined more precisely as the difference between the closing valuation of stored stock plus sales (including marketable output and by those consumed), and the opening valuation of stock stored plus purchases. That is:

$$\text{GROSS INCOME} = (\text{Closing Stock} + \text{Sales}) - (\text{Opening Stock} + \text{Purchases})$$

A gross income calculation for such a business could be set up as follow:

Closing Stock (at the end of the year)	\$..... (+)
Opening Stock (at beginning of the year)	\$..... (-)
Increase/Decrease in Stock	\$.....
Total Sales	\$..... (+)
Products used for reproduction	\$..... (+)
Products used for personal consumption	\$..... (+)
Sub-total	\$.....
Purchases of Stock (If any during the year)	\$..... (-)
Gross Income	\$.....

Changes in value of the stock by the operations would be part of the Gross income calculation.

The factors that influence the Gross income of an enterprise can be summarised as:

- The value of output sold both directly or through intermediaries;
- The value of output re-used as input in the next production, for example, part of the harvest used as seed to sow for the next season;

- The value of output consumed by the farm household or given out as gift valued at the market price;
- The gain/loss in value of output stored - increase or decrease in value of produce stored at harvest price. This is the difference in value at the beginning of the year (opening valuation) and the value at the end of the year (closing valuation);
- The gain/loss in value-added to the produce in the form of processing/ deterioration. E.g. paddy rice processed to polished rice before selling. This is the difference in value from the price at the time of harvest to the final value-added price at the time when it is sold. It considers the quality of the produce, the time of sale and the value added to it before selling.

Net income

Net Income is also referred to as Net Profit or in some cases as the "bottom line". This is because it is reported as the last line in most financial statements. In businesses, Net income can refer to a company's remaining revenues after all expenses and taxes have been paid. In this case it is also known as "Earnings".

To the individual, the money that is left to him/her after taxes are deducted is called

Disposable Income

Most people spend this money on necessities like housing, food, transportation, and on luxury items like restaurant meals, vacations and leisure.

Costs / expenses

In business, **cost** refers to the monetary value that a company has spent in order to produce its product. Cost denotes the amount of money that a company spends on the creation or production of goods or services. It does not include the mark-up for profit. From a *seller's point of view*, cost is the amount of money that is spent to produce the product. If a seller sold the products at the production price, he would break even, meaning that he would not lose money on his sales. However, he would not make a profit either. From a *buyer's point of view* the cost of a product can be called the price. This is the amount that the seller charges for the product, and it includes both the production cost and the mark-up cost, which is added by the seller in order for him to make a profit.

Definitions are from <https://www.e-conomic.co.uk/accountingsystem/glossary/cost>

An **expense**, on the other hand, refers to money paid for goods or services in order to operate a business. Just like revenue, two types of expenses can be identified as **Cash** and **Non-cash** expenses:

- Cash expenses** are monies paid in exchange for goods and services necessary to operate the business. Operating expenses include input costs to produce a particular product or costs associated with a necessary service. A vegetable farmer could incur cash expenses on inputs such as seed, fertilizer, transportation, marketing costs etc.
- Non-cash expenses on the other hand are monetary values lost from a business without actually exchanging cash. One good example of a non-cash expense is depreciation of

inventory (i.e. the decline in value over time), such as equipment or machinery. Another example of a non-cash expense is accrued interest (the cost associated with a loan).

Total cost

This is the overall cost incurred in producing a certain quantity of output e.g. 100 bags of soybean. Or cost incurred on working on a definite size or volume of inputs, e.g. cultivating a hectare of land or processing one ton of soybean. Total cost is usually classified into two categories namely, **variable** and **fixed costs**. The classification of some costs as variable or fixed in some cases depends partly on the nature and timing of the management decisions being considered. This is because some costs can be fixed in relation to certain decisions but others remain variable.

Variable Costs

Variable costs are short-term costs (usually made within one year or within a single production cycle) and include items that:

- occur only if the production/processing takes place (and do not occur if nothing is produced or processed);
- tend to vary according to the size or volume of production or processing; and
- can easily be allocated to individual enterprises.

Fixed Costs

Fixed Costs unlike the variable costs are generally long-term costs (lasting for more than one year). They are defined as costs that remain the same regardless of the size of the enterprise and do not alter with small changes in size. The allocation of fixed costs to a specific enterprise can be difficult, in some cases. Fixed costs (e.g. production and processing equipment) are more difficult to allocate.

A guide to determine whether a cost is variable or fixed

There are some situations in which it becomes difficult to determine whether some costs are variable or fixed. In such situations, a simple test of variability is to determine whether a production increase of 10% will increase a particular cost by the same percentage. If the answer to this is YES, then the cost is variable. If the answer is No, then the cost is not a variable cost and may be either a Fixed or a Capital Cost.

In practice, it may be very difficult to allocate some costs to a particular enterprise as costs may be shared between more than one enterprise. Costs that are difficult to allocate to a particular enterprise should be treated as overheads and not be allocated unless they form a significant percentage of the total cost and some reasonable method of allocation can be determined.

Costs that are not enterprise-specific (e.g. general vehicle costs) and costs that do not vary in the level of production (fixed or overhead costs) are not included in enterprise operating costs. This is because these costs are not directly related to the enterprise and would not normally be affected by changes to the enterprise.

Reference sheet 7: Gross margin analysis

Enterprise performance

Most agricultural businesses consist of more than one enterprise, each with its own distinct source of income and expenses that contribute to the overall profit of the business. Analysis of the performance of these distinct enterprises is important because in most cases there is a potential to substitute one enterprise with another or add a new enterprise to improve overall productivity and profitability of the business. For example:

- Making adjustments to changing enterprise profitability caused by changes to commodity prices, e.g. broiler poultry to layers.
- Utilizing the flexibility of alternative enterprises by changing the type of production, e.g. maize production to soybean production.
- Utilizing the flexibility of alternative cropping enterprises by varying the type and variety of crops, e.g. growing both maize and soybean to supply to animal feed processor.

Gross margin analysis

One of the most common methods of analysing enterprise performance in an agricultural business is through Gross Margin Analysis. Gross Margin Analysis provides measures of the profitability of each enterprise, so that they can be compared based on how effectively each uses the allocated resources. Gross Margin Analysis also makes it possible to compare enterprise performance with other businesses conducting similar enterprises.

However, the validity of these comparisons depends upon the use of consistent accounting methods for the determination of Gross Margin. If different assumptions and approaches are used, any comparison will be meaningless.

Enterprise Gross Margins are determined by deducting operating expenses also known as Variable Costs (those costs that change in proportion to changes in the level of production) from the income of the enterprise, i.e.:

$$\text{Gross Margin} = \text{Enterprise Operating Income} - \text{Enterprise Operating Expenses}$$

Enterprise Operating Income is the total value of the enterprise output for one business cycle (e.g. growing season, a year etc.) and therefore includes the value of all production, any change in the value of enterprise inventories, and transfers from others.

The second step in determining the enterprise Gross Margin is to calculate the Total Enterprise Operating Expenditure, but determining which cost categories should be included in the Gross Margin calculation can be a contentious issue. The conventional approach to the determination of enterprise operating expenses is to include only variable costs that satisfy the following two rules:

1. Expenses are enterprise specific.
2. Expenses vary in direct proportion to the size of the enterprise.

Gross Margin Analysis is a very useful business analytical tool because it provides variable comparative information to assist management with the following:

- Relative profitability of various farm business enterprises can be analysed. Gross margin analysis assists managers to identify the important factors influencing profitability as each individual costs can be analysed and compared.
- Industry comparisons can be made that enable the identification of industry best practices.
- The strengths and weaknesses of an enterprise can be identified so strategies can be developed that improve performance.
- A profitable enterprise combination can be planned within the technical limits of each enterprise and which maximizes the effective use of limited business resources.

Reference sheet 8: Gross profit

This Reference sheet uses definitions taken from '*Conservation of natural resources for sustainable Agriculture, what you should know about...*, *Farm Management and Economics, aspects of Conservation Agriculture*' http://www.fao.org/ag/ca/training_materials/cd27-english/fme/economic.pdf

Gross profit

Gross profit (or Net Income) is the year-by-year profitability of the operations as a whole. It is the reward for labour, capital, and management contributed by the farmer's family during the year. There are two ways of calculating gross profit; either by using gross margins or conducting enterprise profitability calculations. Gross Profit is calculated by combining the gross margin of each of the enterprise activities and deducting fixed costs. Alternatively it could be calculated by estimating the profit for each of the enterprises and aggregating to the level of the operations.

The final income figure reflects the profit of the business and is the reward for the capital and management contributed by the farmer and his family during the year. Gross Profit is necessary to cover the family living expenses and payments of loan principals. The amount left over after accounting for living expenses and loan payments can be reinvested into the business operations.

REFERENCE SHEET 9: PROFITABILITY ANALYSIS

This section is culled from Don Hofstrand – IOWA State University, Extension and Outreach Department.

<http://www.extension.iastate.edu/agdm/wholefarm/html/c3-24.html>

Profitability is the primary goal of all business ventures. Without profitability the business will not survive in the long run. So measuring current and past profitability and projecting future profitability is very important.

Profitability is measured with income and expenses. Income is money generated from the activities of the business. For example, if crops and livestock are produced and sold, income is generated. However, money coming into the business from activities like borrowing money do not create income. This is simply a cash transaction between the business and the lender to generate cash for operating the business or buying assets.

Expenses are the cost of resources used up or consumed by the activities of the business. For example, seed corn is an expense of a farm business because it is used up in the production process. Resources such as a machine whose useful life is more than one year is used up over a period of years. Repayment of a loan is not an expense, it is merely a cash transfer between the business and the lender.

Table 1. Income statement.

Income	
Sale of Crop Products	\$50,000
Sale of Livestock Products	\$25,000
Government Payments	\$10,000
Total Income	\$85,000
Expenses	
Seed	\$10,000
Fertilizer	\$20,000
Feed	\$10,000
Processing	\$10,000
Marketing	\$5,000
Interest	\$5,000
Depreciation	\$10,000
Total Expenses	\$70,000
Net Income	\$15,000

Profitability is measured with an “income statement”. This is essentially a listing of income and expenses during a period of time (usually a year) for the entire business. Information File [Your Net Worth Statement](#) includes - a simple income statement analysis. An Income Statement is traditionally used to measure profitability of the business for the past accounting period. However, a “pro forma income statement” measures projected profitability of the business for the upcoming accounting period. A budget may be used when you want to project profitability for a particular project or a portion of a business.

Reasons for Computing Profitability

Whether you are recording profitability for the past period or projecting profitability for the coming period, measuring profitability is the most important measure of the success of the business. A business that is not profitable cannot survive. Conversely, a business that is highly profitable has the ability to reward its owners with a large return on their investment.

Increasing profitability is one of the most important tasks of the business managers. Managers constantly look for ways to change the business to improve profitability. These potential changes can be analyzed with a pro forma income statement or a [Partial Budget](#). Partial budgeting allows you to assess the impact on profitability of a small or incremental change in the business before it is implemented.

A variety of [Profitability Ratios](#) (Decision Tool) can be used to assess the financial health of a business. These ratios, created from the income statement, can be compared with industry benchmarks. Also, [Income Statement Trends](#) (Decision Tool) can be tracked over a period of years to identify emerging problems.

Accounting Methods

Cash Method of Accounting:

Traditionally farmers have used the “cash method” of accounting where income and expenses are reported on the income statement when products are sold or inputs are paid for. The cash method of accounting, used by most farmers, counts an item as an expense when it is purchased, not when it is used in the business. This has been used as a method of managing tax liability from year to year. However, many non-farm business accounting systems count an item as an expense only when it is actually used in the business activities.

<p><i>Cash accounting formula</i> + Income (when farm products are sold) - Expenses (when production inputs are purchased) = Net Income (difference between sales of products and purchases of inputs)</p>
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However, net income can be distorted with the cash method of accounting by selling more than two years crops in one year, selling feeder livestock purchased in a previous year, and purchasing production inputs in the year before they are needed.

Accrual Method of Accounting:

To provide a more accurate picture of profitability, the accrual method of accounting can be used. With this method, income is reported when products are produced (not when they are sold) and expenses are reported when inputs are used (not when they are purchased). Accrual accounting uses the traditional cash method of accounting during the year but adds or subtracts inventories of farm products and production inputs on hand at the beginning and ending of the year.

A worksheet for computing [Net Farm Income Statement](#) (Decision Tool) with accrual accounting is available that allows you to prepare an accrual net income statement from income tax schedules and net worth statements. Information on creating and using a [Net Farm Income Statement](#) is also available.

<p><i>Accrual accounting formula</i> + Cash Income (when farm products are sold) - Beginning value of inventory of farm products (farm products sold this year but produced last year – products not produced in the current year). + Ending inventory (farm products produced this year but sold next year) = Accrual Income (when farm products are produced) + Cash Expenses (when production inputs are purchased) + Beginning inventory (production inputs used this year but purchased last year) - Ending inventory (production inputs purchased this year but used next year) + Ending accounts payable (production inputs used this year but paid for next year). - Beginning accounts payable (production inputs paid for this year but used last year). = Accrual Expenses (when production inputs are used). = Accrual Net Income (difference between the value of products produced (accrual income) and cost of input used (accrual expenses))</p>
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Although seldom used in farming, Double Entry Accounting (Information File [Understanding Double Entry Accounting](#)) will provide results similar to accrual accounting. Double entry accounting also updates the net worth statement every time an income or expense occurs.

Defining Profitability

Profitability can be defined as either accounting profits or economic profits.

Accounting Profits (Net Income):

Traditionally, farm profits have been computed by using “accounting profits”. To understand accounting profits, think of your income tax return. Your Schedule F provides a listing of your taxable income and deductible expenses. These are the same items used in calculating accounting profits. However, your tax statement may not give you an accurate picture of profitability due to IRS rapid depreciation and other factors. To compute an accurate picture of profitability you may want to use a more accurate measure of depreciation.

Accounting profits provide you with an intermediate view of the viability of your business. Although one year of losses may not permanently harm your business, consecutive years of losses (or net income insufficient to cover living expenditures) may jeopardize the viability of your business.

Economic Profits

In addition to deducting business expenses, opportunity costs are also deducted when computing “economic profits”. Opportunity costs relate to your money (net worth), your labor and your management ability. If you were not farming, you would have your money invested elsewhere and be employed in a different career. Opportunity cost is the investment returns given up by not having your money invested elsewhere and wages given up by not working elsewhere. These are deducted, along with ordinary business expenses, in calculating economic profit.

Economic profits provide you with a long-term perspective of your business. If you can consistently generate a higher level of personal income by using your money and labor elsewhere, you may want to examine whether you want to continue farming.

Profitability is not Cash Flow

People often mistakenly believe that a profitable business will not encounter cash-flow problems. Although closely related, profitability and cash-flow are different. An income statement lists income and expenses while the cash flow statement lists cash inflows and cash outflows. An income statement shows *profitability* while a cash flow statement shows *liquidity*.

Many income items are also cash inflows. The sale of crops and livestock are usually both income and cash inflows. The timing is also usually the same (cash method of accounting) as long as a check is received and deposited in your account at the time of the sale. Many expense items are also cash outflow items. The purchase of livestock feed is both an expense and a cash outflow item. The timing is also the same (cash method of accounting) if a check is written at the time of purchase.

However, there are many cash items that are not income and expense items, and vice versa. For example, the purchase of a tractor is a cash outflow if you pay cash at the time of purchase as shown in the example in Table 2. If money is borrowed for the purchase using a term loan, the down payment is a cash outflow at the time of purchase and the annual principal and interest payments are cash outflows each year as shown in Table 3.

The tractor is a capital asset and has a life of more than one year. It is included as an expense item in an income statement by the amount it declines in value due to wear and obsolescence. This is called “depreciation”. The depreciation expense is listed every year. In the tables below a \$70,000 tractor is depreciated over seven years at the rate of \$10,000 per year.

Depreciation calculated for income tax purposes can be used. However, to accurately calculate net income, a more realistic depreciation amount should be used to approximate the actual decline in the value of the machine during the year.

In Table 3, where the purchase is financed, the amount of interest paid on the loan is included as an expense, along with depreciation, because interest is the cost of borrowing money. However, the principal payments are not an expense but merely a cash transfer between you and your lender

Table 2. Tractor purchase - no borrowing.

Purchase of a \$70,000 tractor, no money borrowed, depreciated over seven years.

	<u>Cash Outflow</u>	<u>Expense</u>
Current Period	\$70,000	
Year 1		\$10,000
Year 2		10,000
Year 3		10,000
Year 4		10,000
Year 5		10,000
Year 6		10,000
Year 7		10,000
Total	\$70,000	\$70,000

Table 3. Tractor purchase - borrowing.

Purchase of a \$70,000 tractor, \$45,000 down payment, \$25,000 paid over five year, seven percent interest, depreciated over seven years.

	<u>Cash Outflow</u>	<u>Expense</u>
Current Period	\$45,000	\$0
Year 1	\$5,000 principal \$1,750 interest	\$10,000 depreciation \$1,750 interest
Year 2	\$5,000 principal \$1,400 interest	\$10,000 depreciation \$1,400 interest
Year 3	\$5,000 principal \$1,050 interest	\$10,000 depreciation \$1,050 interest
Year 4	\$5,000 principal \$700 interest	\$10,000 depreciation \$700 interest
Year 5	\$5,000 principal \$350 interest	\$10,000 depreciation \$350 interest
Year 6	\$0	\$10,000 depreciation
Year 7	\$0	\$10,000 depreciation
Total	\$75,250	\$75,250

Instructions on group work and exercises

Before starting each exercise and the group work, please verify whether all group members have well understood the exercise or the assignment at hand.

To the facilitator:

- Make sure participants are distributed into groups of interest, based on gender, or at random, whatever is needed.
- Make sure each group receives adequate tools and materials such as flip sheets, markers, etc.
- Assign an appropriate place/location to each group and sufficient chairs and tables so that they can work comfortably.
- Make sure the participants have good understanding of the task at hand before they split into their groups so that they do not spend unnecessary time in trying to understand the assignment.

To the participants:

Discuss and exchange within the group about your individual understanding of the expected outputs of the exercise and make sure to come to a common understanding on:

- The objective of the exercise (what is expected and why?)
- How to proceed to answer the question as a group
- How to 'visualise' your findings (using poster paper or pin board and coloured cards or the computer)
- Who to appoint to lead/moderate the discussion
- How and who to present results during the plenary session
- Who will be in charge of the final electronic write up?

Exercise 1: Economic challenges

1. The participants form groups.
2. Read the story below, and to then discuss the questions below.

Case story of maize farmers in 'Nowherecool' community

This case story is central to this module. It is introduced here in the first session and will be further developed in Exercises 3, 4, 5 and 6. Because we needed to limit the time for completing the exercises, we have made a shorter version of the real case story. For those interested in the full story, see the Annex.

Introduction

'Nowherecool' is a small rural community located in the maize belt of the North-West Region of Freedom Republic in Central Africa. The inhabitants of this community are predominantly small-scale farmers that produce several tropical crops of which maize is a major one. As small-scale farmers, they produce just enough to feed their families and a little to sell to get money to meet some of their basic needs like soap, salt, clothing and the like. Most production in this region is small-scale, with an average farm size of about one acre, use local low-yielding varieties with yields averaging between 0.5 and 1 tonne per acre; production is practised on individual farms, produce is of low quality, and there is the absence of any organised marketing system, while farmers make little use of yield-increasing inputs.

About 50 km from this community is an area that is noted for its poultry production. This enclave is known to supply about 60% of the poultry requirements of the entire country. The poultry industry uses large volumes of yellow maize as its main ingredient. Most of the yellow maize for this industry is imported into the country at a great cost (using scarce foreign exchange). Three years ago, an international agricultural development organisation was interested in developing the maize industry in this region as well as in promoting the cultivation of yellow maize. One of its objectives was to organise the scattered small-scale maize producers in selected communities in the region, including 'Nowherecool', to increase the productivity and the commercialisation of yellow maize production in the region. This project identified the mobilisation of these producers into vibrant maize producing and maize marketing associations as one means to achieving their objective. Another means envisaged to support the producers to produce yellow maize was through training and supply of inputs and through linking them to the nearby poultry producers.

3. Discuss the following questions in order to identify economic challenges:
 - A. What is the main product of the farmers of the community and why do they think most farmers here are engaged in the production of this commodity?
 - B. Are the farmers in this community getting enough economic benefits/returns from their farming activities?
 - C. Give a brief description of how the production/processing and marketing are organised in the community?

MODULE 6

Economic Analysis and Crop Budgeting

D. Do you think farmers in this community face any economic challenge? If so, what do you think these challenges are?

Exercise 2: Identification & Classification of Productive Resources

Note that this exercise does not relate to the Case study.

Part A: Identifying productive resources

1. Form three or four groups (depending on the total number of participants and taking into consideration the commodities of interest. It is recommended that people with similar commodities be grouped together).
2. Consider the following possible commodity groups:
 - a. Grains (maize, rice, soybean, groundnut, etc.),
 - b. Vegetables (chilies, tomato, onion, cabbage, ginger, etc.),
 - c. Poultry (traditional poultry, guinea fowl, etc.),
 - d. Animals (cattle, small ruminants, etc.),
 - e. Agro-processing (dairy, rice milling, groundnut/soybean oil, etc.),
 - f. Tree crops (citrus, mango, cashew, pineapple, etc.).
3. Select an activity from one category only. No two groups will select activities from the same category.
4. For each activity selected, list the various resources you think are used or required by the actors of that enterprise.
5. Present your lists in the plenary. The other groups comment and contribute.

Part B: Classifying productive resources

1. After the plenary presentation of group work on exercises 2A, each group will now classify the resources into the various categories of Natural, Material, Human and Financial resources.

Natural Resources	Material Resources	Human Resources	Financial Resources

2. Elaborate a bit on the role the various resources listed play in the success of the business, how important they are, and how they can be adequately managed.

Exercise 3: Going through the Decision-Making Process

1. The participants will again form groups to discuss the following story, which continues from the Maize farmer story introduced in Exercise 1.
2. Someone reads the story out loud.

The Africa Agricultural Productivity Project (AAPP) expressed interest in developing the maize value chain in *Freedom Republic*. One of the communities they were interested in for implementing the project is 'Nowherecool'. After sensitisation and carrying out a SWOT (Strengths, Weaknesses, Opportunities & Threats) analysis, they found out that the project could be viable there. A further market survey and investigation revealed a viable yellow maize market with the poultry farmers' association in the enclave 50 km away from the community. The interest of the poultry farmers was to have the maize farmers produce quality yellow maize to be supplied on a regular basis.

After sensitizing the maize farmers, AAPP was interested in working with them. There was, however, the condition that farmers who were going to be involved with and benefit from the project were expected to contribute ten percent of the project costs.

Assignment

1. Think of yourselves as development workers working in this community. In this capacity, use your knowledge in decision-making processes to assist the maize farmers to make a decision on whether to accept being part of this project or not.
2. Demonstrate your understanding of the decision-making process through the following steps:
 - Set your objectives.
 - Identify the challenges that hinder (or can hinder) you from achieving your objectives.
 - Collect the needed information and data.
 - Identify the various solutions to the challenge.
 - Analyse alternative solutions, taking into consideration the available resources.
 - Select the best solution among the lot.
 - Implement (i.e. take action on) the decision selected.
 - Monitor the outcome of the implementation by taking corrective measures.
 - Evaluate the results of the decision.
3. Present your work in plenary. Point out the good areas and other areas that need improvement.

Exercise 4: Completing the Record Form

1. Split up into 4 groups.

Carefully read the information provided in the text below about James' yellow maize farming enterprise. If needed, consult the background information presented in the Annex.

Note that where dates are not given, the groups should make up dates, ensuring they have a logic chronological order, suitable for the activities timetable. Use the figures to complete the tables of records (**see templates below the story**) as follows:

- Group 1 works on the Cash and Cheque Register. They can do use the flip chart or a computer.
- Group 2 works on the Sales and Assets Record.
- Group 3 works on Expenditure Record.
- Group 4 works on Debtors and Creditors Record.

PLEASE NOTE: The information in the journal will also be used to conduct the exercises in the financial records.

Additional story information from 'Nowherecool': Farm management practices of James' Farming Enterprise

Among the farmers who took part in the piloting phase of the project was an innovative farmer known as James Kabantayili. He saw several opportunities in the project that he wanted to capitalise on. Some of these he learnt at the various farmer trainings conducted and through his own observations and experiences gained during the piloting. Among the things he planned to do was to develop a complete budget for his activities for 2013, and to adopt a strict record-keeping regime by keeping regular and updated financial records all the time.

The following catalogues some of the journal of activities recorded by James' Farming Enterprise in 2013 for the yellow maize project:

- At the beginning of the year 2013 James had a cash amount of \$525 and \$2,520 as his balance at the bank.
- James paid \$10.00 cash for full a year membership on 30th January, 2013.
- On February 25th, he received a cheque payment of \$1,000 from the poultry association for yellow maize supplied in December 2012. On the same day, the bank transferred \$205.00 to the input dealer to pay for inputs supplied to the pilot farm for the 2012 minor growing season.
- On March 3rd 2013, James bought a small-size planter for his farm from ABDAH Foundry at a \$5,200.00. He made a cheque payment of \$1,200.00 with the rest of payment to be made in 8 months.
- James made a personal withdrawal of \$1,500 from the bank on March 8th for his farming activities.

MODULE 6

Economic Analysis and Crop Budgeting

- James got a supply of 54 kg of yellow seed maize for the major growing season cropping on credit from the input dealer on March, 10th, 2013.
- Land preparation (ploughing and harrowing) of six acres was done on March 15th, 2013, at a cost of \$50.00 per acre, paid with cash.
- 24 Bags of NPK (23-10-5) fertiliser was supplied by the input dealer on credit on April 4th, 2013. Each bag of fertiliser costs \$40.00. (Payment for seeds and fertiliser will be paid for after harvest).
- Cash payments for labour for the various activities were made as follows:
 - i. Sowing of six acres of maize at \$20.00 per acre on March 21st, 2013.
 - ii. Fertiliser application on six acres at \$20 per acre on April 7th, 2013.
 - iii. Harvesting of six acres of maize at \$20.00 per acre on July 25th, 2013.
- On July 29th, 2013, James bought a maize Sheller from SUMIDAN Agric. Engineering at \$4,800.00 with a cash deposit of \$800 and a bank loan at an interest of 15% per year to pay for the remaining \$4,000.00.
- 50 bags of yellow maize (100kg each) was sold to Poultry Farmers Association on September 17th, 2013 on credit. On October 13th, 2013, full payment for maize bought from Mr. James was made with a cheque into his bank account.
- On October 15th, 2013, the bank transferred money from Mr. James' account to the input dealer to fully pay for seeds and fertiliser bought by Mr. James on credit.

Table templates:

Table 1: Cash Book

No.	Date	Transaction	Income (\$)	Expenditure (\$)	Balance (\$)	Remark
1						
2						
3						
4						
5						
6						
7						
8						

Table 2: Bank Register

No.	Date	Transaction	Bank	Cheque #	Income (\$)	Expenditure (\$)	Balance (\$)	Remark
1								
2								
3								
4								
5								
6								
7								
8								

Table 3: Sales Records

Date	Item Sold / Description	Sold to / Customer	Quantity	Unit price (\$)	Total Sale (\$)	Remark
TOTAL FOR PERIOD			Total Qty Sold		Total Sale in (€)	

Table 4 : Expenditure Record Chart

Date	Item (Goods or Service)	Source of Supply	Quantity	Unit Price (\$)	Total Cost (\$)	Remark
TOTAL DURING PERIOD			Total Qty Sold		Total Cost in (\$)	

Table 5: Debtors/Receivable Record Chart

Date	Name of Debtor	Item Sold to Debtor	Qty	Unit Price (\$)	Total Amt Owed	Payment Due Date	Date Paid
TOTAL							

Table 6: Creditors/ Accounts Payable Record Chart

Date	Name of Creditor	Item Bought from Creditor	Qty	Unit Price (\$)	Total Amt Owed	Payment Due Date	Date Paid
TOTAL							

Table 7: Asset Record for James Farm

Asset (Description / Make)	Date of Purchase	Date/Year of Manufacture	Serial / Identification#	Purchased Price	Current Value (Purchase Price – Depreciation)	Remarks
TOTAL IN US\$						

Exercise 5: Practising Budget Preparation

1. The participants are again split into the previous three or four groups.
2. Read the case study carefully again and take account of the following new additional information about James' farm:

In 2014, Mr. James planned to cultivate 10 acres of yellow maize during the year, 6 acres during the major growing season and 4 acres during the minor growing season:

3. With this information in mind, develop a budget for the 2014 yellow maize production by James' Farming Enterprise.
4. Present your budgets in plenary so that the other groups can contribute to them.

Exercise 6: Preparing the financial statement , Computing Gross Margin and Net Profit, and Determining the Breakeven Point

1. Participants break into their groups again.
2. Look again at the budget you developed in Exercise 5 so to develop now the Financial Statement (Profit and Loss) account for James' Farming Enterprise for 2013.
3. You will probably not have enough time to complete the table but to at least do as much as you can as the important thing is that you get a feeling for how to fill this table in.

FINANCIAL STATEMENT (PROFIT AND LOSS ACCOUNTS) OF JAMES FARM ENTERPRISE FOR 2013.					
	Item / Activity	Quantity	Unit of Measure	Unit Revenue/ Cost in US\$	Total Revenue/ Cost US\$
	Receipt				
1.	Yellow maize				
2.	Receipt from other crops				
3.	Non-Farm Income				
A.	Total Receipt				
	Operating Cost				
B.	Land Rent				
C.	Land Preparation (Plough and Harrow)				
	Labour				
1.	Sowing				
2.	Weed Control for 2 times				
3.	Fertiliser Application for 4 times				
4.	Harvesting				
5.	Post-Harvest handling and marketing				
6.	Miscellaneous labour cost				
	Sub Total				
	Variable Inputs				
1.	Hybrid Seed Maize				
2.	Compound Fertiliser (NPK 23-10-5)				
3.	Crop Protection Products				
4.	Bags for Bagging				
5.	Commission on production for association				
	Sub Total				

F.	Total Operation Cost (B+C+D+E)				
G.	Gross Margin (A-F)				
H.	Fixed Cost and Contingencies				

MODULE 6**Economic Analysis and Crop Budgeting**

1.	Depreciation on Fixed Assets				
2.	Interest on investment for 6 months at 10%				
3.	Fees and Statutory Taxes				
4.	Association membership due				
	Sub Total				
I.	Total Expenses (F+H)				
J.	Net Profit (A-I)				

From here lead participants to compute the Gross Margin and Profit and determine the levels of outputs or prices of outputs that can render the maize enterprise of James Farm Enterprise profitable in 2013.

Annex to the case study on the '*Nowherecool*' maize business club

Background information

The area enjoys a bi-modal pattern of rainfall making it possible to have two-season cropping during the year.

- The Africa Agricultural Productivity Project (AAPP) facilitated the formation of the '**Nowherecool**' **Yellow Maize Producers and Marketers Association (NOYEMPMA)** with 60 members to form the basis of the value chain that was eventually put into place. The Actors of the maize value chain, was later known as the '**Nowherecool**' **Maize Business Club** (all the value chains formed under the AAPP Project are known as Business Clubs).
- A local business entity known as LIMS Agribusiness Ventures was appointed as a broker or aggregator for the association. This business also doubles as the champion/coordinator for the club.
- The poultry farmers' association that is located about 50 Km away serves as the market for the yellow maize. This association has its own truck to transport stock from farmers.
- A community bank was also made part of this club and it is willing to advance loans to other actors along the value chain.
- A local Non-Governmental Organisation (NGO) '*Empowerment for Better Living*' (EMBEL) was appointed to support the business activities of the value chain by providing capacity building, brokerage, and networking services to the club.
- An agro-dealer company by the name *Farmers' Friend* was also made member of the maize business club.

A series of meetings were held by above actors and they agreed on the terms and conditions with the various agreements signed between them. Among the agreements made were:

- i. The input dealer will supply the recommended inputs (seeds, fertiliser, agro-chemicals, jute bags, etc.) to the farmers at the right time on credit.
- ii. The aggregator is to mobilise products from farmers after harvesting, dry them to the right moisture content, provide temporary storage until they are collected by the poultry farmers' association, and document the whole process.
- iii. The poultry farmers will collect the produce mobilised from the aggregator's store fortnightly and make payments for the stock through the bank, within one month after collecting.
- iv. The bank is to advance credit to the input dealer for stocking inputs at the right time and distribute them to the farmers on credit. This credit will be deducted when the poultry farmers make payments through the bank before the balance is credited to the individual farmer's account.
- v. The farmers are responsible to produce good quality yellow maize for the poultry farmers.
- vi. The price was agreed on as US\$1,200.00 per ton for the highest grade of yellow maize.
- vii. The protocol to adopt by the farmers to ensure quality maize is produced was established. The protocol mentioned:

- The specific hybrid variety that was to be produced.
- The explicit times for sowing, stated as mid-March to the end of April for the major growing season and September to mid-October for the minor growing season (this is to prevent crop failure since the maize cultivation is rain-fed).
- The agronomic protocols, indicating a 2-pass weed control, the type and quantity of fertiliser to use (NPK 23-10-5) and when to apply, the pest control chemical to use and the time to spray, the planting distance and the harvesting time. The selected variety takes 110 days from sowing to harvesting.
- The moisture content of the maize and the grades.
- A specific identification number for each farmer which is used to label the bags for traceability at a standard weight of 100 kg per bag.
- That abiding by all agreements in the protocol, farmers are assured to harvest a minimum of 2.5 tons per acre.
- After agreeing on the various terms, an action plan was drawn to pilot the project during the minor growing season of 2012 with the involvement of 20 farmers, each with one acre. The project was very successful with yields ranging between 2.7 to 3.2 tons at all the farms.
- All the actors were satisfied and the club was encouraged to commercialise the activities with all the 60 members involved with commercial production, starting from 2013.
- To facilitate timely operations and smooth take-off, the bank granted NOYEMPMA credit to buy a new tractor with accessories (trailer, plough and harrow) to provide services of land preparation and carting off produce for the farmers.
- The aggregator was also given credit to purchase drying equipment, expand his store and put in place quality assurance equipment.
- Farmers are obliged to pay cash for the use of the services of the tractor, the drying equipment, as well as for the use of storage and quality assurance services.

Farm management practices of James' farming enterprise

Among the farmers who took part in the piloting phase was an innovative farmer known as James Kabantayili. He saw several opportunities in the project that he wanted to capitalise on. Some of these he learnt at the various trainings the farmers were in, and through his own observations and experiences gained during the piloting. Among the things he planned to do were as follows:

- Develop a complete budget for his activities in 2013. He planned to cultivate 10 acres of yellow maize during the year, 6 acres during the major growing season and 4 acres during the minor growing season.
- Farmer James realised that at the time of sowing and harvesting/shelling, there is a very high demand for labour, leading to a labour shortage and a higher cost. Even then, some people were not able to carry out these activities in time. For that matter James planned to buy a small portable planter drawn by a tricycle that he saw at a farmer's fair in 2012. This would help him to do his activities on time and he could also rent it out to other farmers. In the same way he planned to buy a sheller to use for shelling his maize and also to rent it out to other farmers.

- To be able to monitor his activities and derive the optimum benefit from these activities, Farmer James resolved to put into practice all the knowledge and skills he acquired during the trainings he received in Association development, technical and business practices. He will adopt a strict record keeping regime for all his activities and keep regular and updated financial records.

The following lists some activities recorded by James' Farming Enterprise on his yellow maize project in 2013:

- At the beginning of the year (2013), Mr. James had a cash amount of \$525 and bank balance of \$2,520.
- Paid for full year membership due of \$10.00 per annum with cash on 30th January, 2013.
- On February 25th, he received a cheque payment of \$1,000 from the poultry association for the payment for yellow maize supplied in December 2012. On the same day, the bank transferred \$250.00 to the input dealer to pay for inputs supplied for the 2012 minor growing season pilot.
- On 3rd of March 2013, the farm bought a mini planter from ABDAH Foundry at a cost of \$5,200.00. James made a cheque first instalment of \$1,200.00 with the rest of the payment arranged to be made within 8 months beginning from April and terminating in November, 2013, at equal instalments of \$500.00 with no interest. The machine has a predicted life span of 10 years.
- James made a personal withdrawal of \$1,500 from the bank on the 8th of March for his farming activities.
- On July 29th 2013, James bought a maize sheller from SUMIDAN Agric. Engineering at a cost of \$4,800.00 with a cash deposit of \$800 and bank loan at an interest of 15% per year for the payment of the remaining \$4,000.00. The re-payment arrangement with the bank was in 8 equal instalments starting from November 2013 and terminating in June, 2014; with four months grace period during which only the interest will be paid. The useful life of this machine is also estimated to be 10 years.
- The farm at this point has no permanent workers but depends on family and hired labour. Through his training, James learnt that he has to charge for family labour as well.

Production information

The following were plans made by James' Farm Enterprise for the production of yellow maize for the year 2013:

- Cultivate 10 acres of yellow maize (6 acres during the major growing season (March to August) and four acres during the minor growing season (September to December).
- The estimated yield was 25 bags (of 100kg each) on the average.
- The price for each bag was negotiated at US\$40.00 per bag.
- The farm was expected to pay US\$10.00 per acre per year land rent to the land owner.
- Land preparation involving ploughing and harrowing was estimated to cost \$50.00 per acre.
- 42 man-days were required for labour supply on one acre to take care of sowing, weed control, pest and diseases control, and harvesting, at a rate of \$5.00 per man-day.

MODULE 6

Economic Analysis and Crop Budgeting

- An amount of \$3.00 was to be spent on each bag for post-harvest handling and marketing issues.
- 9 Kg of hybrid seed maize was required to sow an acre and a cost of \$5.00 per kilo.
- 4 bags of special formulated fertiliser (NPK 23-10-5) is to be applied to one acre at a cost of \$40.00 per bag. Seeds and fertiliser were supplied on credit to be paid for after harvest and sales.
- 2 Litres of insecticides were to be used to protect the crops from pest attack per one acre. Each litre of the insecticide cost \$7.00
- Jute sacks were to be used for bagging the yellow maize, at a cost of \$0.50 each.
- A commission of \$0.50 was also to be paid by each member of the association on each bag of produce.
- Depreciation of fixed assets was estimated at \$1,000.00 for the year.
- Interest to be paid on monies used was estimated as \$421.00.
- Fees and taxes totalled \$150.00.
- Major growing season crops of 15 tons were sold in October, 2013, whereas the minor growing season harvest of 10 tons was to be made in February, 2014. In both cases, payment was made through the bank one month after the sales.



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