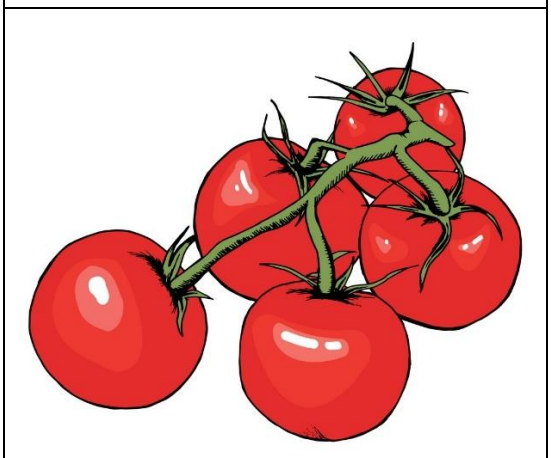
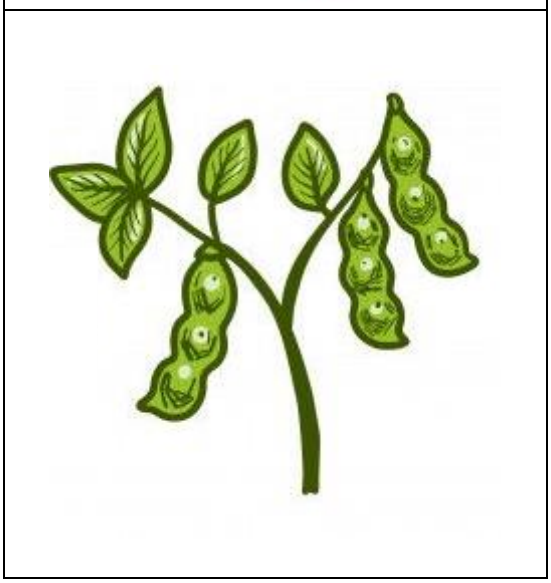
Implemented by Food and Nutrition Security, Enhanced Resilience (FANSER)





Farmer Business School

Production system

Village Chickens, Tomatoes, Soybean

Training notebook and workbook

Zambia

(Eastern Province)

1st December 2020

Foreword

The Farmer Business School (FBS) approach has been developed for cocoa production systems in 2010 by GIZ/Sustainable Cocoa Business and local partners from Ghana, Nigeria, Côte d'Ivoire, Cameroun and Togo. Over 480,000 cocoa producers have been trained by local partners in these 5 countries with the support of the Federal Ministry of Economic Cooperation and Development of Germany (BMZ) and other donors such as Bill & Melinda Gates Foundation, World Cocoa Foundation, NIRSAL and the European Union.

Since 2012, other GIZ programs as well as public and private partners have adapted FBS to other export and food commodities. The total outreach in Africa is exceeding 1,400,000 smallholders in 22 African countries.

Inspired by these successes, the Food and Nutrition Security, Enhanced Resilience (FANSER) program in Zambia has adopted the FBS approach as part of its strategy. In addition to the market and business orientation, FBS builds on a nutrition sensitive approach to agriculture. The objective of the project is improved food and nutrition security for Zambian peoples affected by malnutrition that can be achieved in a sustainable and profitable way from local production. In Zambia, FANSER implements its activities in Eastern and Luapula provinces in cooperation with Ministry of Agriculture and Food Security and other stakeholders.

The present training notebook is an adaptation of the FBS this curriculum to livestock (poultry) productions systems in Zambia. The adaptation work has been done in partnership with the Agribusiness Facility for Africa (ABF) and Food and Nutrition Security, Enhanced Resilience (FANSER) program with reference to the FBS version implemented in Namibia and Nigeria.

The training shall contribute to achieve the following objectives:

- Productivity and quality increases of smallholder agriculture;
- Production diversification of smallholdings;
- Improved household nutrition especially among the rural communities
- Improved incomes and living conditions of smallholders and their families and
- Professionalizing producers and their organizations.

The present training notebook is an adaptation of this curriculum to livestock(poultry) systems in Zambia. The adaptation work has been done in partnership with the programmes Agribusiness Facility for Africa (ABF) and Food and Nutrition Security, Enhanced Resilience (FANSER) program.

Only FBS-Trainers that underwent a special qualification program including class-room and learning trainings with farmers deliver the training in line with the principles of adult and discovery learning and the quality standards of FBS.

At the end of the training

Ask for your FBS participation certificate with serial number and signature of your trainer

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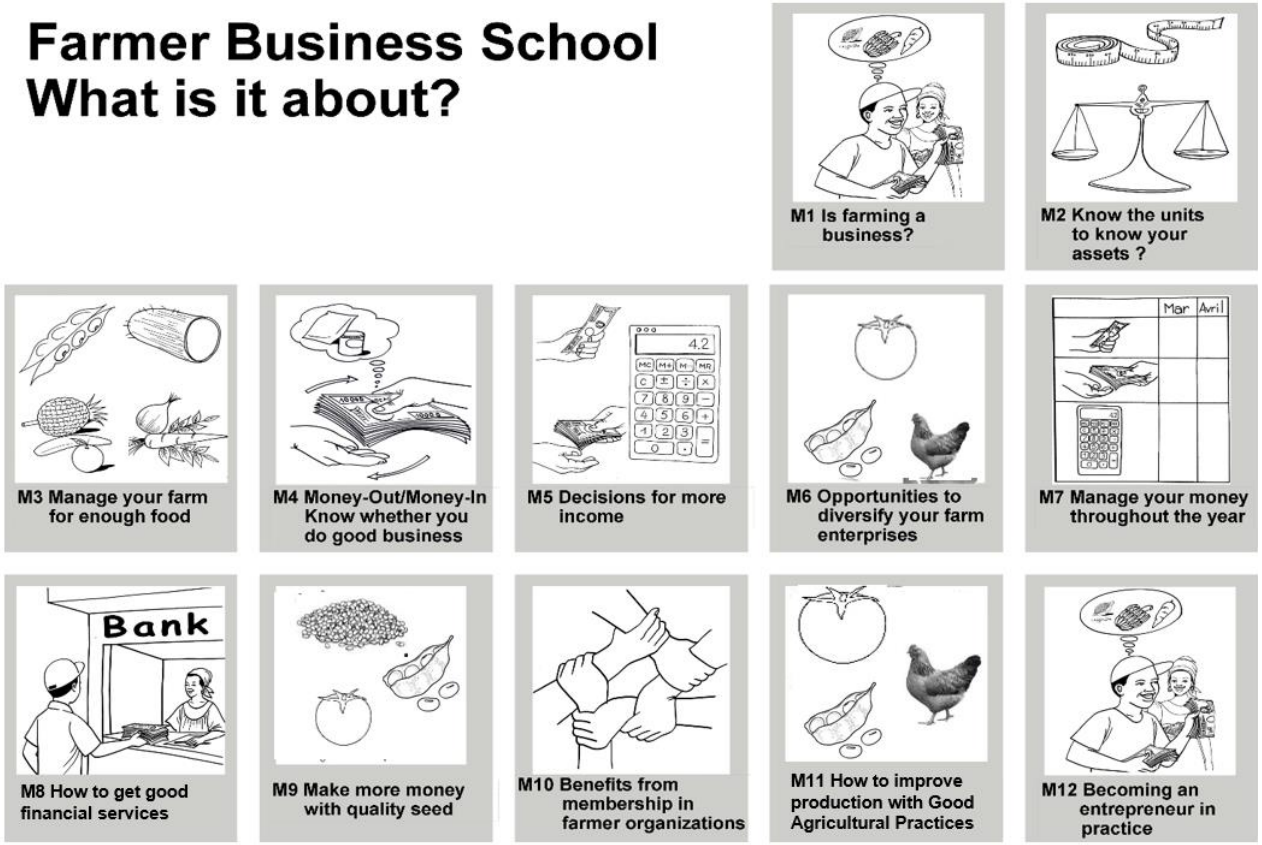
ABC of the **A**gricultural **B**usiness **C**ommunity

A	**A**griculture **A**sset
B	**B**usiness **B**ank
C	**C**redit **C**alculate
D	**D**iversification **D**ebt
E	**E**nterprise **E**quipment
F	**F**arm **F**ood
G	**G**ain **G**ross margin
H	**H**arvest **H**ectare
I	**I**ncome **I**nvestment
J	**J**ob
K	**K**ilogram **K**ilocalorie
L	**L**oss **L**abour
M	**M**anagement **M**arket

N	**N**utrition **N**egotiation
O	**O**rganization **O**wner
P	**P**lan **P**rofit **P**roductivity
Q	**Q**uality **Q**uantity
R	**R**ecord keeping **R**ice
S	**S**avings **S**chool fees
T	**T**on **T**rial
U	**U**nit **U**nion of producers
V	**V**alue **V**ariable cost
W	**W**ork **W**arrantage
X	E**X**port crop E**X**penditure
Y	**Y**ield
Z	**Z**ero **Z**one

1. Farmer Business School: the training



What are the advantages?

The skills learned at the Farmer Business School will allow you to become a better entrepreneur who:

- Takes advantage of improved technologies and market opportunities to increase income
- Plans and adapts his production to assure food security for the family
- Targets decisions and investments in production of tomato, soya beans and village chicken rearing
- Leads professional negotiations with buyers, input suppliers, credit institutions and landowners.
- Manages financial means and credit.

Module 1 Farming is a business

What examples of businesses do you know?

Examples of businesses	Start and end of activities	Capital Needs	Money Entries
Construction business 	One can start when one has a contract with a client One must respect the conditions of the client One construction site follows the next	One needs **capital** for the machines, the materials and the employees	Gives income when the construction is completed
Trading 	One can start and stop commerce at any time.	One needs **capital** to buy merchandise and to pay employees	Gives income all year long
Processing of agricultural products Groundnut and Sesame butter 	One can start the processing at any time if one has the equipment and primary materials One stops the processing when the primary material is no longer available.	One needs **capital** to buy raw material and equipment	Gives income all year long as long as you have raw material
Agriculture My farm is my business 	One needs to start the agricultural work at the beginning of the season	One needs **capital** for tools, equipment, inputs and paid workers	Gives income once a year Money is spent every day (« and is not even calculated »)

What do you need and use to produce (collect examples)**?**

Inputs	Tools and equipment	Labour	Money	Land
Seeds Insecticide Fungicide	Machete, hoe Sprayer Drying slaps and racks	Family work force Paid workers, communal labour	Own money Credit	Own Land Rented Land

Main Lesson:

The agricultural entrepreneur (man or woman) plans and organizes him/herself to have inputs, tools, labour and money necessary for the production ready at the right time.

What does one need to know about the market to do good business?

The market for agricultural produce	The market for inputs and equipment
• The location of the market • Who needs the product and wants to buy it? • The quality of product that is demanded by the market • The price of the product compared to other markets	• The locations of sale • Who sells the inputs and equipment? • The quality of the inputs and equipment • The price of sale of the inputs and equipment

How does the price of agriculture products change?

The prices of agriculture products change according to the season of the year • At times of abundance, the prices are lowest. • Prices are highest at times of scarcity for example during the dry season.	The prices of agricultural products change between years. • The price of a product that is needed by more and more people will rise from one year to the next. • The price of a product that is produced in greater abundance will fall from one year to the next.

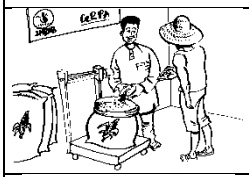
Main Lesson

To do successful business, the agricultural entrepreneur (man or woman) informs him/herself on the prices of inputs and products at different markets at different moments.

This allows the farmer to plan production and to make decisions on the purchase of inputs and the sale of produce.

Module 1-Agricultural Calendar to plan the production of Tomatoes

The times of work…
of the main season are shown by a square ■
of the off-season are shown by a circle ●

The tasks of the entrepreneur	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
 **Prepare the field/Nursery**												
 **Making basins or ripping the field**												
 **Purchase seeds**												
 **Planting in main field**												
 **Specified Fertilizer application**												
 **Weeding**												
 **Staking of tomato plants**												
 **Harvest and marketing**												

Main Lesson

For a good yield, the agricultural entrepreneur (man or woman) plans to do the necessary work in the field and apply the inputs at the right time.

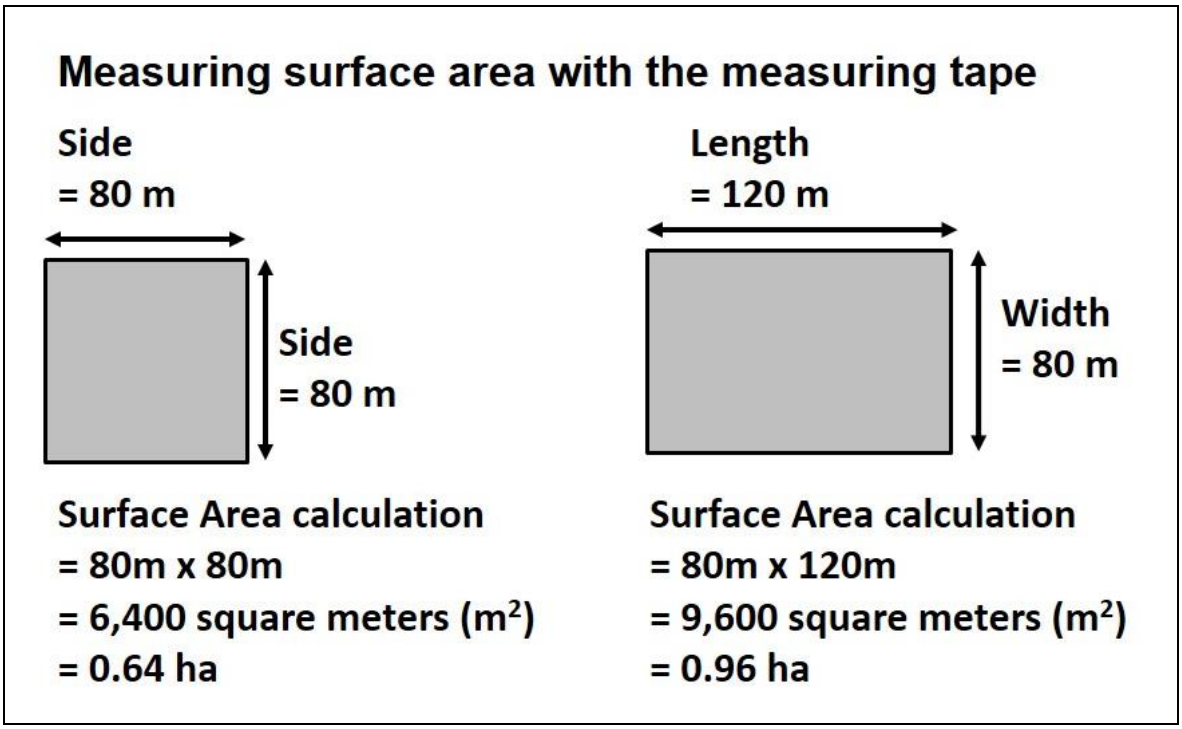
Module 2 Know the units to know your assets

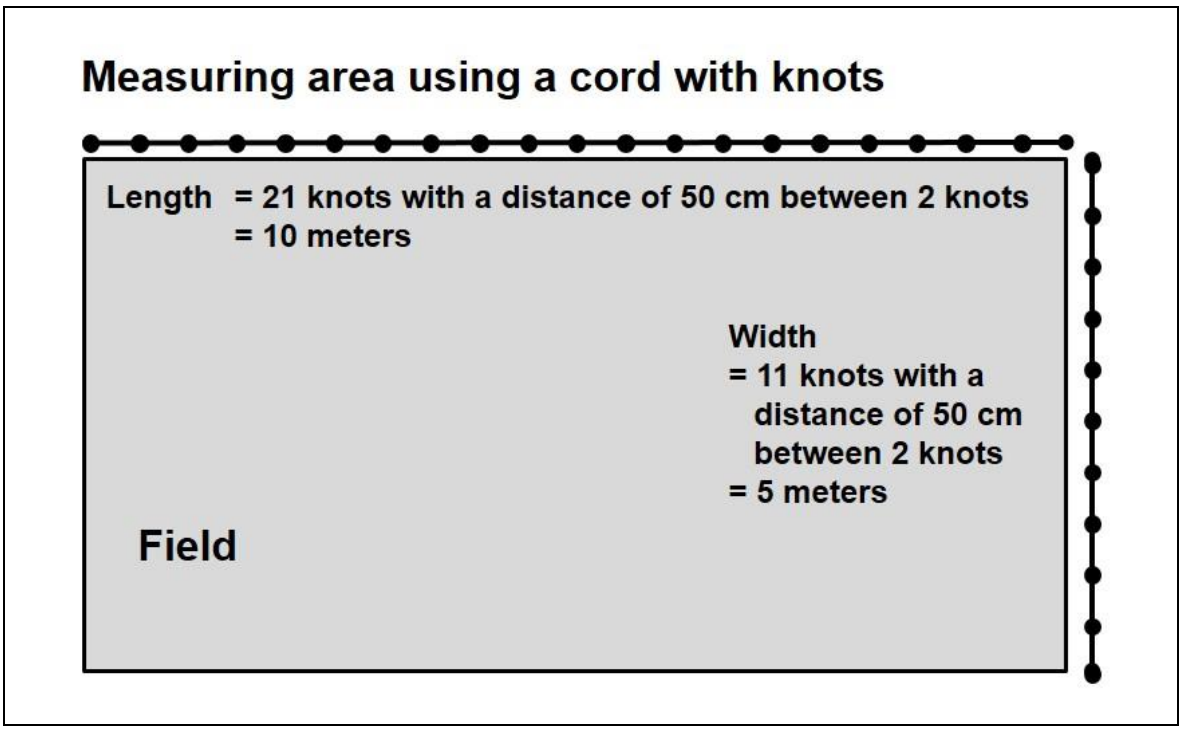
Measure and calculate the surface of a field

The size or surface area of a field is measured in meters squared or hectares.

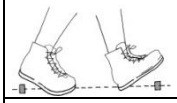
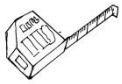
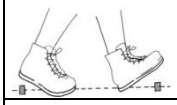
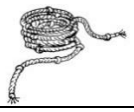
1 hectare(ha) is 10,000 meters squared (m^2)

1 lima is 0.25 hectare (ha) which is 2,500 meters squared (m^2).





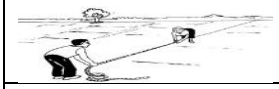
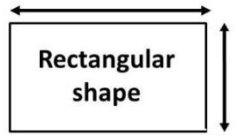
Exercise

	Method	Length	x	Width	=	Surface Size	Difference/ Measuring tape	Rank
Group 1	Estimation by steps 		x		=			
	Measuring tape in meters 		x		=			
Group 2	Estimation by steps 		x		=			
	Cord with knots 		x		=			

Main Lessons

1. Measures of the size of field by using walking-steps are not always accurate.
2. The agricultural entrepreneur (man or woman) who
   - Underestimating field size risks using too little fertilizer and too little seeds. This can lead to reduced yields.
   - Overestimating field size risks using too much fertilizer and to plant too close together. This can lead to reduced yields and unnecessary spending.
3. Accurate knowledge of the size of the farm is important to plan production, to correctly apply inputs, and to correctly space plants and seeds.
4. The agricultural entrepreneur (man or woman) measures his fields with a measuring tape, a cord with knots or a measure band.
5. A field in the shape of a rectangle or square is easy to measure. On such a field it is easier to sow or plant in lines respecting the correct spacing distances.

Standard Measures and Units

Distance	**Kilometre (km): 1 km is 1,000 meters (m):**
Length or width of a field 	**Meter (m): 1 m is 100 centimetres (cm).**
Surface Area 	**Meter squared (m^2)** **Hectare (ha): 1 ha is 10,000 m^2** **1 Acre: 4,000 m^2 (e.g. 50m x 80m, or 40m x 100m)** **1 Hectare: 2.5 acres** **1 Lima: 2,500 m^2 (e.g. 50m x 50m, or 25m x 100m)** **1 Hectare : 4 Lima**
Yield per Unit Area 	**Yield per hectare = Yield per 2.5 acres or Yield per 4 Lima** **e.g. 2,400kg/ha of soya: 600kg/Lima of soya**
Volume 	**Litres (l)** **Millilitre (ml)** **Litre (l) : 1 l (litre) = 1,000 ml (millilitres)**
Weight 	**Grams (g)** **Kilograms (kg): 1 kg is 1,000 g** **Ton (T) : 1 Ton is 1,000 kg**
Time 	**Minutes (min)** **Hour (h)= 1 hour has 60 minutes** **Day (D) = 1 day has 24 hours**
Agricultural work 	**Man-day (MD): The work of an adult man in one day.** Example: Work on one hectare requires 10 Man-days. (10 MD / ha). The work can be done by 1 adult person in 10 days or 10 adult persons in 1 day. **It is important to specify the number of hours in a workday.**

Main Lessons

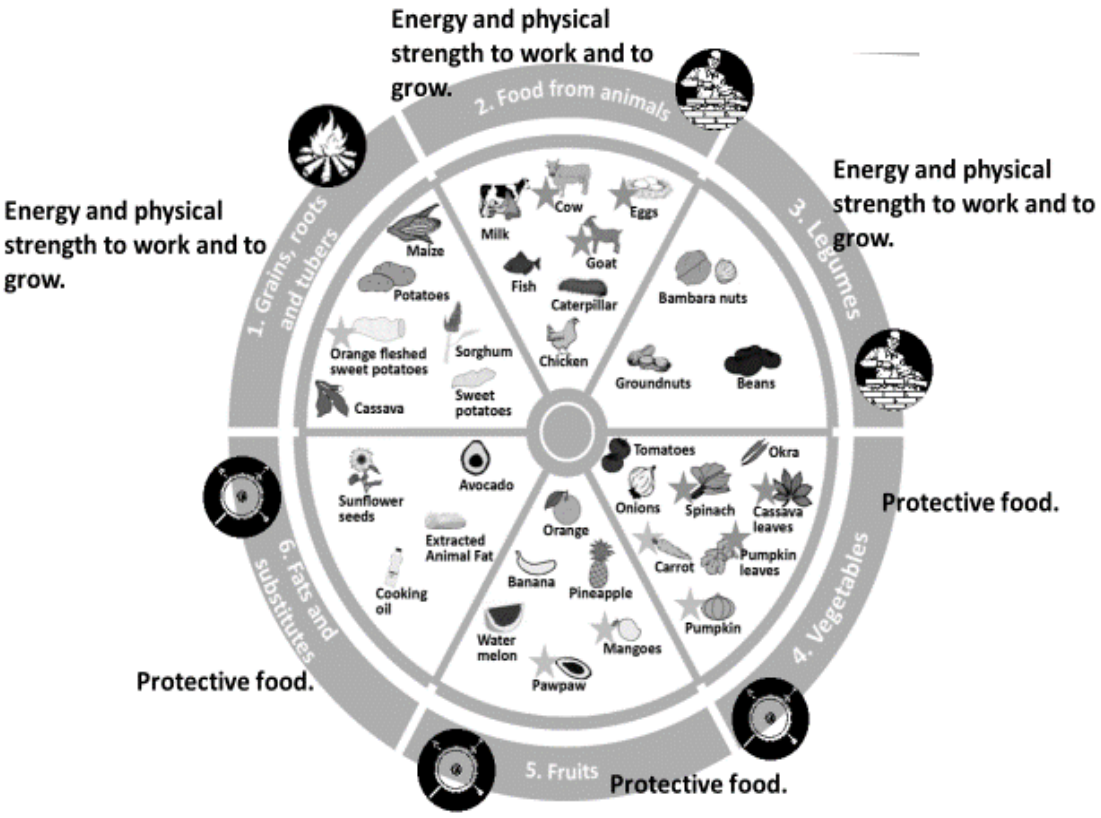
Units and measures are important for the agricultural entrepreneur (man or woman). They are necessary …

- To know precisely your assets, your land and labour.
- To correctly plan production and the quantities of inputs that need to be purchased in time
- To apply correct amounts of Agro-inputs such as seeds, fertiliser, chemicals
- To know the quantity harvested
- To correctly evaluate losses or profits
- To better sell your products.

Measures and units are essential to do good business in agriculture.

Module 3 Manage your farm for more and better food

Making money with agriculture is good, but the farm needs to provide also enough diversified and good food for your family. For this reason, we want to tackle this issue and look at the six (6) food groups promoted in the FANSER project.



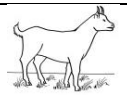
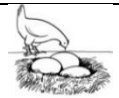
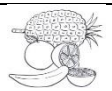
Source: adapted from FANSER project

Main lesson

The agricultural entrepreneur (man or woman) knows that each type of food is necessary for a good and balanced nutrition of his/her family.

The six (6) Food groups and their content in energy, protein and fat

Food Group	Food		Energy kcal per kg	Fat Grams per kg	Protein Grams per kg	Iron Grams per kg	Vitamin A Grams per kg	
Grains, roots and tuber		Rice	**3,610**	**10**	**65**			
		White Maize	**3,530**	**38**	**93**	**25**	**90**	
		Sorghum	**3,450**	**32**	**107**	**30**	**0**	
		Cassava roots	**1,490**	**2**	**12**	**10**	**0**	
		Sweet potato (pale)	**1,050**	**17**	**3**	**0**	**300**	
		Potato	**930**	**0**	**30**	**7**	**0**	
Legumes		Groundnut	**5,670**	**450**	**258**	**25**	**0**	
		Beans	**3,330**	**8**	**226**	**4**	**0**	
		Soybeans	**1,700**	**70**	**155**	**70**	**0**	
		Cowpeas	**870**	**5**	**49**	**50**	**60**	

Food Group	Food		Energy kcal per kg	Fat Grams per kg	Protein Grams per kg	Iron Grams per kg	Vitamin A Grams per kg	
Food from animals		Fish (dried)	**2,550**	**470**	**74**	**60**	**0**	
		Meat	**1,610**	**79**	**195**	**25**	**0**	
		Eggs	**1,580**	**112**	**120**	**28**	**3000**	
		Village chicken	**1,020**	**7**	**23**	**15**	**0**	
Fruits		Bananas	**930**	**1.8**	**11.5**	**5**	**30**	
		Oranges	**470**	**2**	**10**	**5**	**90**	
		Fruits	**450**	**2**	**9**	**-**	**-**	
		Watermelons	**390**	**2**	**6**	**5**	**1770**	
Vegetables		Amaranthus	**3,850**	**65**	**14.5**	**267**	**1460**	
		Vegetables	**300**	**2**	**10**	**-**	**-**	

	Food		Energy kcal per kg	Fat Grams per kg	Protein Grams per kg	Iron Grams per kg	Vitamin A Grams per kg	
		Okra	**290**	**2**	**21**	**12**	**360**	
		Spinach	**230**	**4**	**29**	**27**	**4690**	
Fats and substitues		Cooking oil	**8,840**	**1,500**	**26**	**0**	**0**	
		Sunflower seeds	**5,980**	**500**	**240**	**24**	**70**	

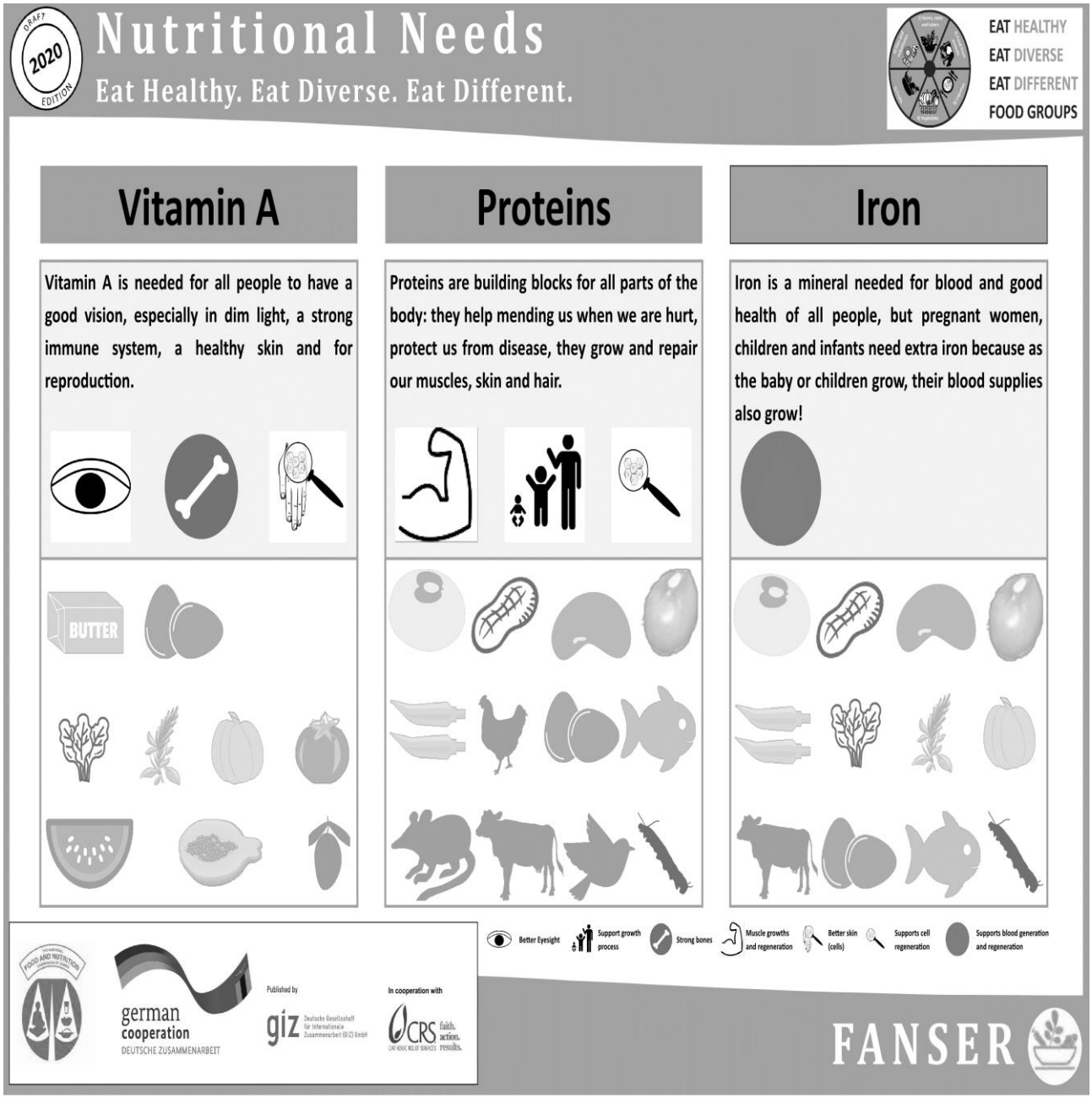
Adapted from FANSER and FAO 2004, Family Nutrition Guide; www.fao.org/3/a0218e/a0218e15.htm

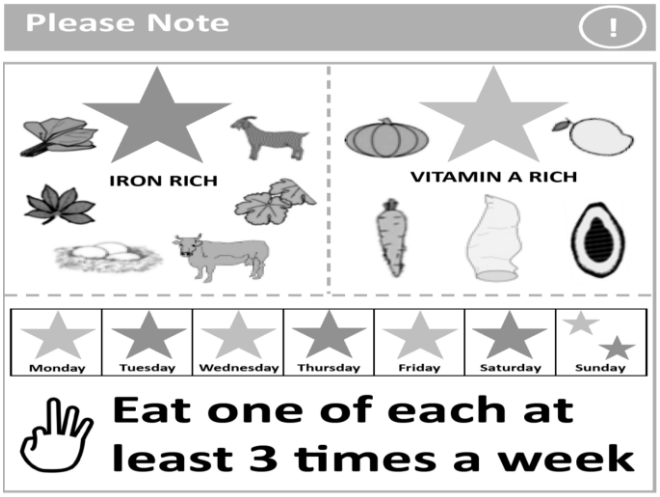
Explanation: The kilocalorie (Kcal or 1000 calories) is a measure for the energy of a food. The number of kilocalories of one kg of a given food shows you whether the food is rich or poor in energy.

Main lesson

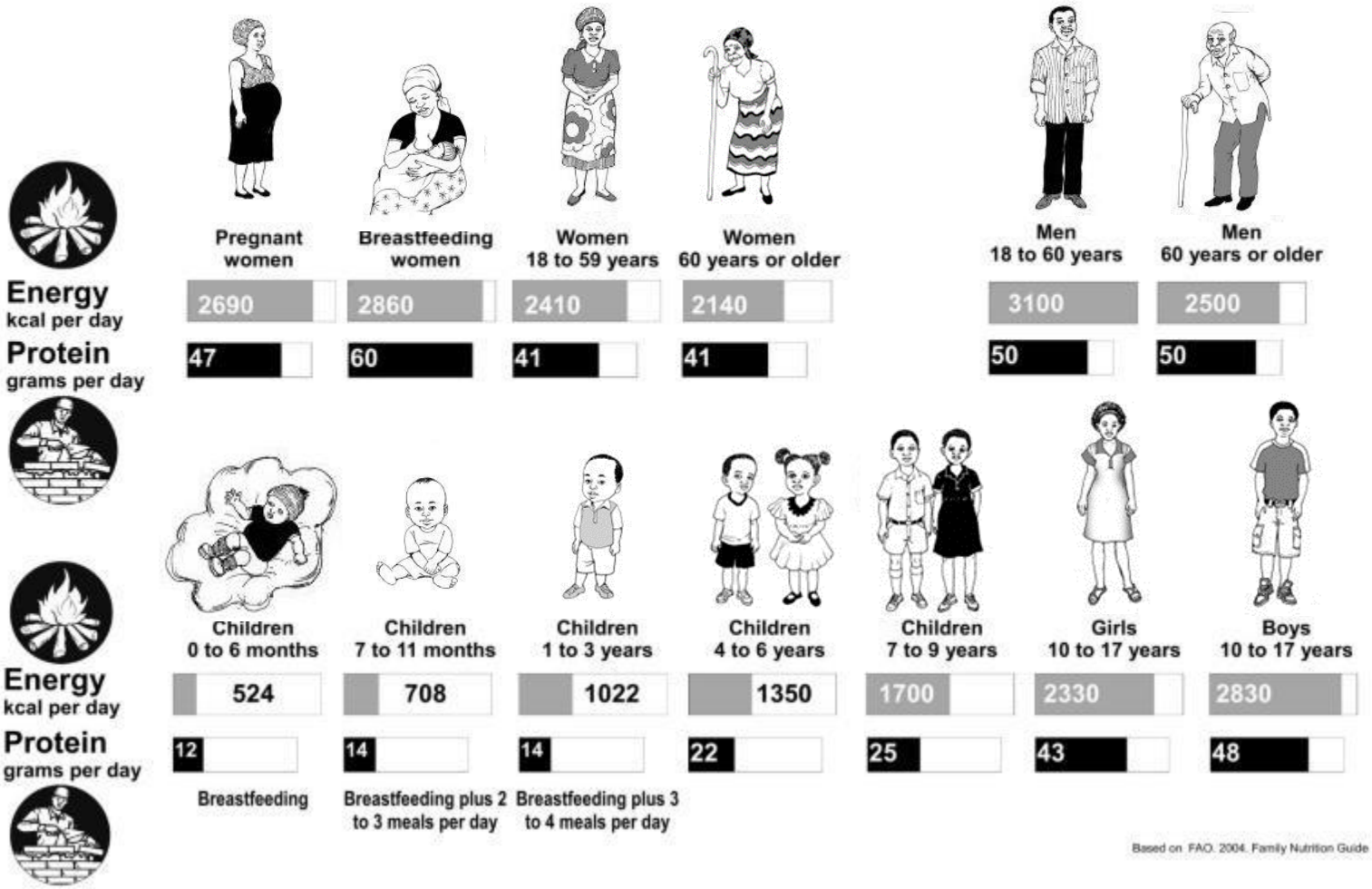
The agricultural entrepreneur (man or woman) knows that the different types of food need to be combined to ensure a good nutrition of his/her family.

Why do we need micro-nutrients?





How much energy and protein do we need per day?



Main Lessons

The agricultural entrepreneur (man or woman) knows that the members of his family have different needs of food.

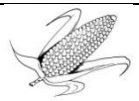
Very good food for pregnant and breastfeeding women ensures good health and growth of new children.

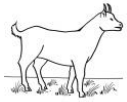
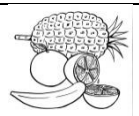
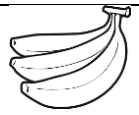
From the 7th month onward children need good quality meals (without spices!) and breast feeding for good health and growth.

Children of a certain age need almost as much food as adult persons.

Nutritional calendar: How do you cover the food needs of your family?

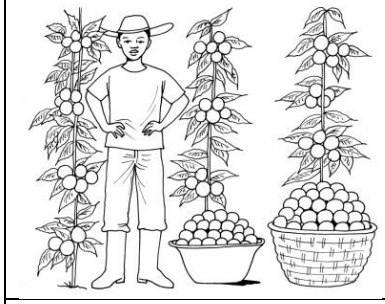
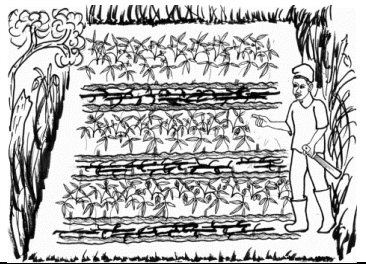
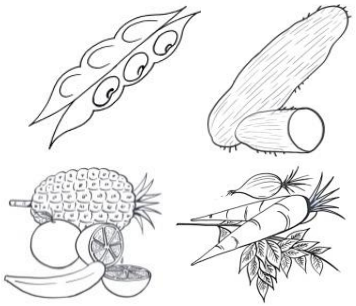
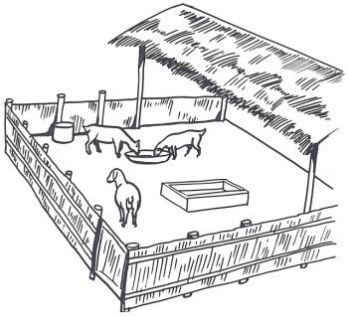
- Mark a square ☐ if the product is sold
- Mark a triangle △ in the months you need to buy the product
- Mark a circle ❍if the product is eaten
- Indicate by a line _____ how long the product is available from own production
- What are the months of high prices and the months of low prices for a food item?

Food Group	Food	Sell ☐	Eat ❍	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Grains, roots and tuber	 Sorghum														
	 Potato														
	 Fresh cassava														
	 Pumpkin														
	 Orange Fresh Sweet Potato														
	 Rice														
	 Maize														

Food Group	Food	Sell ☐	Eat ❍	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Legumes	 Soybean														
	 Groundnut														
	 Cowpeas														
	 Beans														
Foods from Animals	 Village Chicken														
	 Goat														
	 Fish														
	 Eggs														
Fruits	 Oranges														
	 Bananas														

Food Group	Food	Sell ☐	Eat ❍	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	 **Watermelons**														
Vegetables	 Spinach														
	 Okra														
	 Amaranthus														
Fats and substitutes	 Sun Flower seeds														
	 Cooking oil														

How to have more and better food?

Improving yields Improved varieties 	**Fertilization** 	**Mulching to conserve water** 	**Diversify cropping** 	**Associate crops** 
Reduce losses in storage 	**Manage money to buy food** 	**Raise animals** 	**Prepare well** 	**Clean water and hygiene** 

Other possibilities

- ➔ Produce crops that ripen early or that resistant to drought;
- ➔ Harvest water for small irrigation
- ➔ Some families might have the opportunity to establish fishponds

Source: adapted from FAO 2004.Family Nutrition Guide

Module 4 Money-Out, Money-In: Know whether you are doing successful business

But before we start, let's learn how to use a calculator

What is a Calculator?

A calculator is a tool you can use to do addition, subtraction, multiplication and division

To put on the calculator

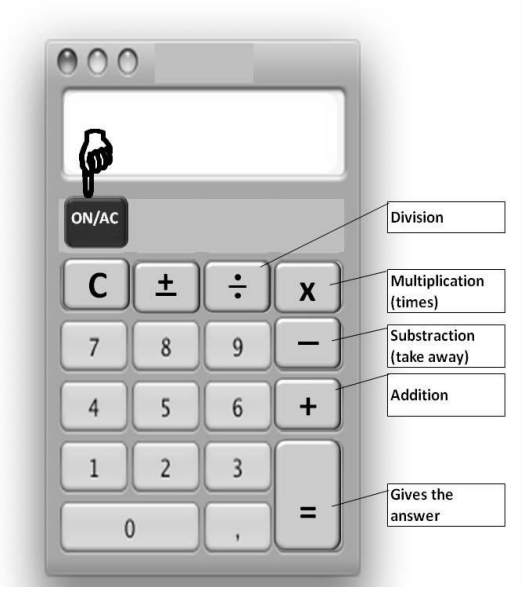
Press the **ON/AC**

To clear a wrong number

Press C – CE

To start a new calculation

Press the **ON**/**AC** to clear

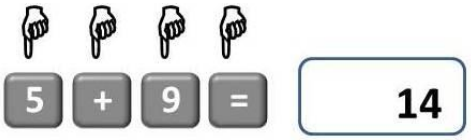


Addition (plus)

Example:

5 + 9 = 14

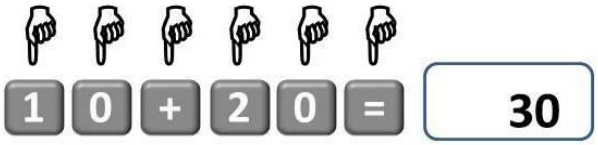
Type



Example:

10 + 20 = 30

Type

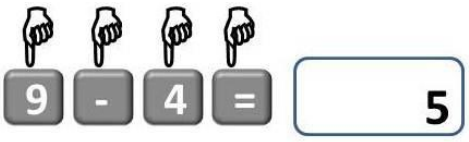


Subtraction (take away)

Example:

9 - 4= 5

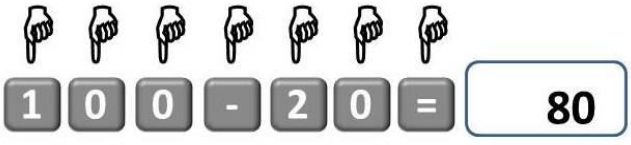
Type



Example:

100 - 20 = 80

Type



Example:

- 20 - 29= - 49

Type

Multiplication (times)

Example:
25 x 12 = 300

Type

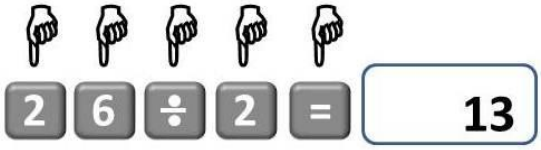
Example:
22 x 27 = 594

Type

Division (divide)

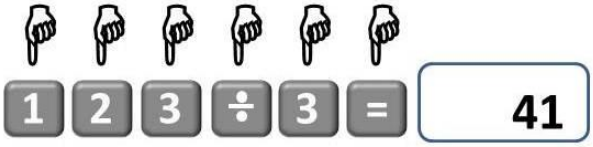
Example:
26 / 2 = 13

Type



Example:
123 / 3 = 41

Type



Here are some examples. Try to get the same result.

Addition (plus)	
100 + 250 =	350
124 + 24 + 52 =	200
1035 + 465 + 120 =	1620

Subtraction (take away)	
33 - 13 =	20
175 - 35 =	140
1243 - 12 =	1231

Multiplication (times)	
33 x 3 =	99
75 x 5 =	375
12 x 12 =	144

Division (divide)	
200 / 4 =	50
350 / 7 =	50
1100 / 8 =	137,5

Here we will see how to determine if business was good or bad. We will calculate the "money in" and "money out" from different produce.

Exercise Sheet 1 : Village Chicken – Current production

Steps:

2. Multiply the quantity with the price in each line.

- Sum the money spent ("Money-Out") on inputs and labour
- Multiply the yield by the price of sale ("Money-In")
- Subtract the sum of "Money-Out" from the "Money-In"
- Determine if there was a profit or a loss

General characteristics of Village Chicken rearing in Eastern Province

- Free range scavenging, with high rate of mortality due to predation
- Low or absence of vaccination against common diseases
- Little or no feed supplement

100 local breed birds, with 56% mortality experienced (1 batch/year)	**Unit**	**Quantity**	**Price (ZMW)**	**Total (ZMW)**
1. Money-Out				
Inputs and services				
Chicks	Each	100	15	
Maize Bran	50kg bag	4	50	
Transport to Market	trip	1	30	
Total cost of inputs and services				
Labour				
Placement of chicks	MD	0.25	25	
Collection of bedding and litter management	MD	2	25	
Hygiene & cleaning management	MD	2	25	
Care and feed supplement	MD	21	25	
Marketing/Selling	MD	2	25	
Total labour needs and costs	**MD**	**27.25**	**ZMW**	
Total costs (Costs of inputs and services + costs of labour)			**ZMW**	
2. Money-In				
Production (Poultry) x Price of Sale	kg	44	35	
By-Product (1) Eggs x Price of sale	Each	440	1.5	
By-Product (2) Manure x price of sale	kg	200	5	
Total money-in (ZMW)				
3. Profit or loss? Money-In − Money-Out ☺ or ☹				
4. Unit cost (Total money out/Production)			**ZMW/Chicken**	

Exercise Sheet 2: Soya beans - non-improved

0.25 ha of Soya: local variety without Inoculant /manure		Unit	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out					
Inputs and services					
Land Preparation- conventional ploughing		Lima	1 x	150 =	
Seed -recycled		50 Kg	1 x	200 =	
Empty grain bags		50 kg	4 x	3.5 =	
Transport from field		Trip	2 x	15 =	
Transport to market		Bag	4 x	5 =	
Total costs of inputs and services					
Labour					
Planting		MD	2 x	25 =	
Thinning and gap filling		MD	2 x	25 =	
Ridging		MD	4 x	25 =	
Weeding		MD	5 x	25 =	
Harvesting		MD	2 x	25 =	
Threshing & packing		MD	2 x	25 =	
Marketing		MD	1 x	25 =	
Total labour needs and costs		MD	**17**	**ZMW**	
Total costs (Costs of inputs and services + costs of labour)				**ZMW**	
2. Money-In					
Soya Yield **x** Price of Sale		Kg	175 x	4.5 =	
3. Profit or loss? Money-In − Money-Out				☺ or ☹	
4. Unit cost (Total money out/Production)				**ZMW/Kg**	

Exercise Sheet 3: Tomato (Non-improved)

0.25 ha of Tomato local variety, no fertiliser		Unit	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out					
Inputs and services					
Seed		25g	1 x	30 =	
Insecticide		100mls	1 x	30 =	
Fungicide-Barrier		100mls	1 x	50 =	
Manure		50kg bag	5 x	10 =	
Transport-field to home		Box(10kg)	52 x	2 =	
Transport to market		Box(10kg)	52 x	5 =	
Total costs of inputs and services					
Labour					
Land preparation (Nursery)		MD	1 x	25 =	
Land Preparation(main field)		MD	3 x	25 =	
Manure application		MD	1 x	25 =	
Transplanting from nursery		MD	3 x	25 =	
Weeding & re-ridging (x2)		MD	4 x	25 =	
Staking		MD	6 x	25 =	
Insecticide & fungicide application		MD	6 x	25 =	
Watering (main field)		MD	80 x	25 =	
Harvesting		MD	3 x	25 =	
Marketing		MD	4 x	25 =	
Total labour needs and costs		MD	**110**	**ZMW**	
Total costs (Costs of inputs and services + costs of labour)				**ZMW**	
2. Money-In					
Tomato Yield **x** Price of Sale		Kg	520 x	7 =	
3. Profit or loss? Money-In − Money-Out				☺ or ☹	
4. Unit cost (Total money out/Production				**ZMW/kg**	

Comparing of Profits from current production systems

Please tell what is good and what bad business is and indicate reasons.

		 **100 Birds/Chickens**	 **0.25 ha Soya**	 **0.25 ha Tomatoes**
No. of animals/Yield	No. animals/Kg	**44**	**175**	**520**
1. Money-Out	ZMW/0.25ha/Cycle	**2,411**	**837**	**3,274**
2. Money-In	ZMW/0.25ha/Cycle	**3,200**	**788**	**3,640**
3. Profit or Loss?	ZMW/0.25ha/Cycle			

Module 4 – Solution: Exercise 1 : Village Chicken

100 local breed birds, with 56% mortality experienced (1 batch/year)	Unit	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out				
Inputs and services				
Chicks	Each	100	15	1,500
Maize Bran	50kg bag	4	50	200
Transport to Market	trip	1	30	30
Total cost of inputs and services				**1,730**
Labour				
Placement of chicks	MD	0.25	25	6.25
Collection of bedding and litter management	MD	2	25	50
Hygiene & cleaning management	MD	2	25	50
Care and feed supplement	MD	21	25	525
Marketing/Selling	MD	2	25	50
Total labour needs and costs	**MD**	**27.25**	**ZMW**	**681.25**
Total costs (Costs of inputs and services + costs of labour)			**ZMW**	**2,411.25**
2. Money-In				
Production (Poultry) x Price of Sale	kg	44	35	1,540
By-Product (1) Eggs x Price of sale	Each	440	1.5	660
By-Product (2) Manure x price of sale	kg	200	5	1,000
Total money-in (ZMW)				**3,200**
3. Profit or loss? Money-In − Money-Out ☺ or ☹				**788.75**
5. Unit cost (Total money out/Production – No of Chickens)			**ZMW/Chicken**	**54**

Module 4 –Solution Exercise 2 : Soya (Current practice)

0.25ha of Soya: local variety without Inoculant /manure		Unit	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out					
Inputs and services					
Land Preparation-conventional ploughing		Lima	1 x	150 =	150
Seed -recycled		50Kg	1 x	200 =	200
Empty grain bags		50kg	4 x	3.5 =	14
Transport from field		Trip	2 x	15 =	30
Transport to market		Bag	3.5 x	5 =	17.5
Total costs of inputs and services					**411.5**
Labour					
Planting		MD	2 x	25 =	50
Thinning and gap filling		MD	2 x	25 =	50
Ridging		MD	4 x	25 =	100
Weeding		MD	5 x	25 =	125
Harvesting		MD	1.5 x	25 =	37.5
Threshing & packing		MD	1.5 x	25 =	37.5
Marketing		MD	1 x	25 =	25
Total labour needs and costs		MD	**17**	**ZMW**	**425**
Total costs (Costs of inputs and services + costs of labour)				**ZMW**	**836.5**
2. Money-In					
Soya Yield **x** Price of Sale		Kg	175 x	4.5 =	**787.5**
3. Profit or loss? Money-In − Money-Out				☺ or ☹	**-49**
4. Unit cost (Total money out/Production)				**ZMW/Kg**	**4.78**

Module 4 –Solution Exercise 3: Tomato (Current Practice)

0.25 ha of Tomato local variety, no fertiliser		Unit	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out					
Inputs and services					
Seed		25g	1 x	30 =	30
Insecticide		100mls	1 x	30 =	30
Fungicide-Barrier		100mls	1 x	50 =	50
Manure		50kg bag	5 x	10 =	50
Transport-field to home		Box(10kg)	52 x	2 =	104
Transport to market		Box(10kg)	52 x	5 =	260
Total costs of inputs and services					**524**
Labour					
Land preparation (Nursery)		MD	1 x	25 =	25
Land Preparation (main field)		MD	3 x	25 =	75
Manure application		MD	1 x	25 =	25
Transplanting from nursery		MD	3 x	25 =	75
Weeding & re-ridging (x2)		MD	4 x	25 =	100
Staking		MD	6 x	25 =	150
Insecticide & fungicide application		MD	5 x	25 =	125
Watering (main field)		MD	80 x	25 =	2,000
Harvesting		MD	3 x	25 =	75
Marketing		MD	4 x	25 =	100
Total labour needs and costs		MD	**110**	**ZMW**	**2,750**
Total costs (Costs of inputs and services + costs of labour)				**ZMW**	**3,274**
2. Money-In					
Tomato Yield **x** Price of Sale		Kg	520 x	7 =	**3,640**
3. Profit or loss? Money-In − Money-Out			☺ or ☹		**366**
4. Unit cost (Total money out/Production				**ZMW/kg**	**6.30**

Comparing of Profits from current production systems

Please tell what is good and what bad business is and indicate reasons.

		 **100 Birds/Chickens**	 **0.25 ha Soya**	 **0.25 ha Tomatoes**
No. of animals/Yield	No. animals/Kg	**44**	**175**	**520**
1. Money-Out	ZMW/0.25ha/Cycle	**2,411**	**837**	**3,274**
2. Money-In	ZMW/0.25ha/Cycle	**3,200**	**788**	**3,640**
3. Profit or Loss?	ZMW/0.25ha/Cycle	**789**	**-49**	**366**
		☺	☹	😐
		Good Business	**Bad Business**	**Fairly good Business**

Main Lessons

1. To know if you are doing successful business with a crop, you need to know the "Money-In" and "Money-Out" with precision.
2. The agricultural entrepreneur (man or woman) tracks the inputs and labour used in a field, and calculates the "Money-In" and "Money-Out"
3. From the "Money-In" the entrepreneur subtracts the "Money-Out". The result tells him if he made profit or loss.
4. The agricultural entrepreneur (man or woman) makes a **profit**, if the "Money-In" is greater than the "Money-Out". In that case he/she does **good business**.
5. The agricultural entrepreneur (man or woman) makes a **loss**, if the "Money-Out" is greater than the "Money-In." In that case he/she does **bad business**.
6. You recognize a loss with the minus dash in front of the number: **-**
7. The good agricultural entrepreneur (man or woman) will abandon this crop or use a better technique to make a profit.
8. To make sure that he/she will make a profit, the agricultural entrepreneur calculates "Money-In" and "Money-Out" **before production**.

Module 5: Decisions for doing Good business – Improved practices

In this section we will see the possible improvements and how to make good decisions. We will use our results and do the same calculations for improved techniques. The calculations are explained on page 34.

Some of the improvements made to the current practices in order to improve productivity and quality of the products are tabulated below:

Village Chicken • Use of improved breed of the chickens that grow faster (4 months) • Food supplement i.e. Maize bran, sunflower cake, minerals • Provision of clean and safe drinking water from protected sources • Strict adherence to vaccination regimes • Provision of Clean poultry shelter to protect the chickens from diseases and predators
Soya • Crop rotation • Use of tested, certified improved seed from known agro-shops • Use of inoculant • Use of recommended spacing & seed rates • Application of conservation techniques i.e. early and proper land preparation(ripping), early weeding by use of herbicides • Scouting for pests & diseases, and application of appropriate pesticides where and when necessary
Tomatoes • Crop rotation • Use of certified seeds • Use of crop specific fertiliser in recommended rates • Use of simple irrigation in the dry months • Scouting for pests & diseases, and application of appropriate pesticides/fungicides

Module 5 – Exercise 1 – Village Chicken – (Comparison - Current vs Improved production)

Village Chicken 	Unit	Village chicken-Local breed 56%Mortality out of 100 birds			Village Chicken-Improved breed (2% Mortality out of 100 birds		
		Quantity	Price (ZMW)	Total (ZMW)	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out							
Inputs							
Chicks	Each	100 x	15 =	1,500	100 x	15 =	
Maize Bran	50kg Bag	4 x	50 =	200	6 x	50 =	
Sunflower cake	50kg Bag	0 x	0 =	0	2 x	100 =	
Minerals	Lumpsum	0 x	0 =	0	2 x	150 =	
Vaccination-Gumboro	100mls	0 x	0 =	0	2 x	30 =	
Vaccination -Newcastle	100mls	0 x	0 =	0	2 x	30 =	
Vaccination-Fowl pox	100mls	0 x	0 =	0	2 x	100 =	
Disinfectant	1 ltr	0 x	0 =	0	1 x	100 =	
Transport to Market	trip	1 x	30 =	30	2 x	30 =	
Cost of Inputs				**1,730**			
Labour							
Placement of Chicks	MD	0.25 x	25 =	6.25	0.25 x	25 =	
Collection of bedding and	MD	2 x	25 =	50	3 x	25 =	
Hygiene and Cleaning	MD	2 x	25 =	50	2 x	25 =	
Vaccination	MD	0 x	25 =	0	1 x	25 =	
Disinfection	MD	0 x	25 =	0	2 x	25 =	
Care/Securing	MD	21 x	25 =	525	26 x	25 =	
Marketing	MD	2 x	25 =	50	3 x	25 =	
Labour needs + costs	**MD**	**27.25**	**-**	**681.25**	**74.5**	**-**	
Money-Out (ZMW)				**2,411.25**			
2. Money-In							
Poultry yield x Price of	Each	44 x	35 =	**1,540**	98 x	80 =	
Eggs yield x price of sale	Each	440 x	1.5 =	**660**	1,470 x	1.5 =	
Manure yield x price of	Kg	200 x	5 =	**1,000**	500 x	5 =	
Total Money-In	ZMW			**3,200**			
3. Profit or Loss	☺or☹			**788.75**			
Unit Cost (ZMW/Chicken)				**54.8**			

***Note**: Improved practice in Village chicken can have two cycles per year, hence all figures (including GM) will be double the amount in above schedule. The second cycle starts from July to November

Module 5 – Exercise 2: Soya beans (Comparison - Current vs Improved production)

		Soya local variety without inoculant/manure (0.25 ha)			Soya- improved variety with inoculant and fertiliser(0.25ha)		
	Unit	Quantity	Price (ZMW)	Total (ZMW)	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out							
Inputs and Services							
Land Preparation-Ripping	Rip lines				23	2	
Land preparation-ploughing	0.25ha	1	150	150			
Seed	25Kg	2	100	200	1	350	
Lime	25kg				1	50	
Pesticides – Herbal (neem tree solution)	100mls				1	30	
Herbicide-Selective (Precise usage)	1 ltr				1	115	
Soya fertiliser - (Precise usage)	50kg				0.5	550	
Foliar fertiliser - (Precise usage)	1 ltr				1	80	
Empty Bags	50kg bag	4	3.5	14	10	3.5	
Transport from field	trip	2	15	30	5	15	
Transport to market	Per bag	3.5	5	17.5	10	5	
Cost of Inputs				**411.50**			
Labour							
Lime application	MD		25		0.5	25	
Planting	MD	2	25	50	1	25	
Thinning/Gap filling	MD	2	25	50	0.5	25	
Weeding-Manual	MD	5	25	125		25	
Ridging	MD	4	25	100		25	
Herbicide application	MD		25		1.5	25	
Fertiliser application	MD				0.5	25	
Pesticide application	MD		25		0.5	25	
Harvesting	MD	1.5	25	37.50	3.5	25	
Threshing, winnowing & bagging	MD	1.5	25	37.50	2.5	25	

Marketing	MD	1 x	25 =	25	2 x	25 =	
Labour needs and costs	MD	**17**		**425**	**12.5**	**-**	
Money-Out (ZMW)				**836.50**			
2. Money-In							
Yield **x** Price of Sale	Kg	175 x	4.5	**787.50**	600 x	5.5 =	
3. Profit or Loss ☺or☹ Money-In ⛔ Money-Out				**-49**			
Unit Cost (ZMW/kg) Money-Out / Yield				**4.78**			

Module 5 – Exercise 3: Tomato

		Tomato-Non Improved (0.25 ha)-			Tomato-Improved (0.25 ha) -with irrigation		
	Unit	Quantity	Price (ZMW)	Total (ZMW)	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out							
Inputs and Services							
Manure	50kg bag	5 x	10 =	50	5 x	10 =	
Seed	25grms	1 x	30 =	30	1 x	60 =	
Fertiliser-Veg Fruity	25kg bag	x	=		1 x	120 =	
Fertiliser-Veg Top	25kg bag	x	=		1 x	150 =	
Pesticides – Herbal (neem tree solution)	100mls	1 x	30 =	30	1 x	30 =	
Fungicide-Barrier - Herbal	100mls	1 x	50 =	50	1 x	120 =	
Sticker	1 ltr	x	=	0	1 x	80 =	
Fungicide- Mancozeb - Herbal	100mls	x	=	0	1 x	140 =	
Fertiliser-Foliar - Precise	1 ltr	x	0 =	0	1 x	80 =	
Fungicide-Copper chloride - Herbal	100mls	x	=	0	1 x	70 =	
Transport-field to home	Box (equiv. 10kg)	52 x	2 =	104	150 x	2 =	
Transport to the market	Box (equiv. 10kg)	52 x	5 =	260	150 x	5 =	
Cost of Inputs				**524**			
Labour							
Land preparation-Nursery	MD	1 x	25 =	25	0.5 x	25 =	
Land preparation-main field	MD	3 x	25 =	75	1.5 x	25 =	
Manure application	MD	1 x	25 =	25	1 x	25 =	
Transplanting	MD	3 x	25 =	75	3 x	25 =	
Fertiliser application	MD	x	25 =	0	1 x	25 =	
Weeding	MD	4 x	25 =	100	3 x	25 =	
Staking	MD	6 x	25 =	150	8 x	25 =	
Pesticide/Fungicide application	MD	5 x	25 =	125	10 x	25 =	

Watering/irrigation	MD	80 x	25 =	2,000	85 x	25 =	
Harvesting	MD	3 x	25 =	75	6 x	25 =	
Marketing	MD	4 x	25 =	100	3 x	25 =	
Labour needs and costs	MD	**110**		**2,750**	**122**	**-**	
Money-Out (ZMW)				**3,274**			
2. Money-In							
Yield **x** Price of Sale	Kg	520 x	7 =	**3,640**	1,500 x	7 =	
3. Profit or Loss ☺or☹ Money-In ➖ Money-Out				**366**			
Unit Cost (ZMW/kg) Money-Out / Yield				**6.3**			

****Note:** Under improved technique in Tomato, there can be two cycles of production per year, hence the above figures will be double. The second cycle starts from August to December

Explanation of Fixed Costs

Certain costs are called « fixed costs ». These are costs for equipment and tools that the farmer owns and are used on multiple crops or over multiple years, such as sprayers or irrigation pumps. The Fixed Costs do not vary with the size of the field.

Module 5 – Solution Exercise 1- Local (Village) Chicken – Comparison between current and Improved production systems

Village Chicken	Unit	Village chicken-Local breed 56%Mortality out of 100 birds			Village Chicken-Improved breed (2% Mortality out of 100 birds		
		Quantity	Price (ZMW)	Total (ZMW)	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out							
Inputs							
Chicks	Each	100	15	1,500	100	15	1,500
Maize Bran	50kg Bag	4	50	200	6	50	300
Sunflower cake	50kg Bag	0	0	0	2	100	200
Minerals	Lumpsum	0	0	0	2	150	300
Vaccination-Gumboro	100mls	0	0	0	2	30	60
Vaccination -Newcastle	100mls	0	0	0	2	30	60
Vaccination-Fowl pox	100mls	0	0	0	2	100	200
Disinfectant	1 ltr	0	0	0	1	100	100
Transport to Market	trip	1	30	30	2	30	60
Cost of Inputs				**1,730**			**2,780**
Labour							
Placement of Chicks	MD	0.25	25	6.25	0.25	25	6.25
Collection of bedding and litter	MD	2	25	50	3	25	75
Hygiene and Cleaning	MD	2	25	50	2	25	50
Vaccination	MD	0	25	0	1	25	25
Disinfection	MD	0	25	0	2	25	50
Care/Securing	MD	21	25	525	26	25	650
Marketing	MD	2	25	50	3	25	75
Labour needs + costs	**MD**	**27.25**	**-**	**681.25**	**74.5**	**-**	**931.25**
Money-Out (ZMW)				**2,411.25**			**3,711.25**
2. Money-In							
Poultry yield x Price of Sale	Each	44	35	**1,540**	98	80	7,840
Eggs yield x price of sale	Each	440	1.5	**660**	1,470	1.5	2,205
Manure yield x price of sale	Kg	200	5	**1,000**	500	5	2,500
Total Money-In	ZMW			**3,200**			**12,545**
3. Profit or Loss	☺or☹			**788.75**			**8,833.75**
Unit Cost (ZMW/Chicken)				**54.8**			**39.9**

Module 5 – Solution Exercise 2: Soybeans - Comparison between current and Improved production systems

		Soya local variety without inoculant/manure (0.25 ha)			Soya- improved variety with inoculant and fertiliser(0.25ha)		
	Unit	Quantity	Price (ZMW)	Total (ZMW)	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out							
Inputs and Services							
Land Preparation-Ripping	Rip lines	x	=		23 x	2 =	46
Land preparation-ploughing	0.25ha	1 x	150 =	150	x	=	
Seed (plus Inoculant for Improved system)	25Kg	2 x	100 =	200	1 x	350 =	350
Lime	25kg	x	=		1 x	50 =	50
Organic herbal Pesticides – (neem tree solution)	100mls 	x	=		1 x	30 =	30
Herbicide – precise usage	1 ltr	x	=		1 x	115 =	115
Organic Soya fertiliser – Precise usage	50kg	x	=		0.5 x	550 =	275
Organic Foliar fertiliser – Precise usage	1 ltr	x	=		1 x	80 =	80
Empty Bags	50kg bag	4 x	3.5 =	14	10 x	3.5 =	35
Transport from field	trip	2 x	15 =	30	5 x	15 =	75
Transport to market	Per bag	3.5 x	5 =	17.5	10 x	5 =	50
Cost of Inputs				**411.50**			**1,106**
Labour							
Lime application	MD	x	25 =		0.5 x	25 =	12.5
Planting	MD	2 x	25 =	50	1 x	25 =	25
Thinning/Gap filling	MD	2 x	25 =	50	0.5 x	25 =	12.50
Weeding-Manual	MD	5 x	25 =	125	x	25 =	
Ridging	MD	4 x	25 =	100	x	25 =	
Herbicide application	MD	x	25 =		1.5 x	25 =	37.50
Fertiliser application	MD	x	=		0.5 x	25 =	12.50
Pesticide application	MD	x	25 =		0.5 x	25 =	12.50

Harvesting	MD	1.5 x	25 =	37.50	3.5 x	25 =	87.50
Threshing, winnowing & bagging	MD	1.5 x	25 =	37.50	2.5 x	25 =	62.50
Marketing	MD	1 x	25 =	25	2 x	25 =	50
Labour needs and costs	MD	**17**		**425**	**12.5**	**-**	**312.50**
Money-Out (ZMW)				**836.50**			**1,418.50**
2. Money-In							
Yield **x** Price of Sale	Kg	175 x	4.5	**787.50**	600 x	5.5 =	**3,300**
3. Profit or Loss ☺or☹ Money-In ⛔ Money-Out				**-49**			**1,881.50**
Unit Cost (ZMW/kg) Money-Out / Yield				**4.78**			**2.36**

Module 5 – Solution Exercise 3: Tomato - Comparison between current and Improved production systems

			Tomato-Non Improved (0.25 ha)-			Tomato-Improved (0.25 ha) -with irrigation		
	Unit		Quantity	Price (ZMW)	Total (ZMW)	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out								
Inputs and Services								
Manure	50kg bag		5	10	50	5	10	50
Seed	25grms		1	30	30	1	60	60
Fertiliser-Veg Fruity	25kg bag					1	120	120
Fertiliser-Veg Top	25kg bag					1	150	150
Pesticides – Herbal (neem tree solution)	100mls		1	30	30	1	30	30
Barrier – Organic Insecticide	100mls		1	50	50	1	120	120
Sticker	1 ltr				0	1	80	80
Mancozeb – Organic Fungicide	100mls				0	1	140	140
Fertiliser-Foliar	1 ltr			0	0	1	80	80
Fungicide-Copper chloride - Herbal	100mls				0	1	70	70
Transport-field to home	Box (equiv. 10kg)		52	2	104	150	2	300
Transport to the market	Box (equiv. 10kg)		52	5	260	150	5	750
Cost of Inputs					**524**			**1,950**
Labour								
Land preparation-Nursery	MD		1	25	25	0.5	25	12.50
Land preparation-main field	MD		3	25	75	1.5	25	37.50
Manure application	MD		1	25	25	1	25	25
Transplanting	MD		3	25	75	3	25	75
Fertiliser application	MD			25	0	1	25	25
Weeding	MD		4	25	100	3	25	75
Staking	MD		6	25	150	8	25	200
Pesticide/Fungicide application	MD		5	25	125	10	25	250
Watering/irrigation	MD		80	25	2,000	85	25	2,125

Harvesting	MD	3 x	25 =	75	6 x	25 =	150
Marketing	MD	4 x	25 =	100	3 x	25 =	75
Labour needs and costs	MD	**110**		**2,750**	**122**	**-**	**3,050**
Money-Out (ZMW)				**3,274**			**5,000**
2. Money-In							
Yield **x** Price of Sale	Kg	520 x	7 =	**3,640**	1,500 x	7 =	**10,500**
3. Profit or Loss ☺or☹ Money-In ➖ Money-Out				**366**			**5,500**
Unit Cost (ZMW/kg) Money-Out / Yield				**6.30**			**3.33**

Module 6 Improve your farm enterprise for more income throughout the year – Comparison on current and improved production systems for all enterprises

- What crops will you choose?
- Rank crops based on Profit
- Make a choice based on this ranking

	Unit	 local breed-Village Chicken	 improved breed-Village Chicken	 Local variety soya-without inoculant	 Improved variety soya with inoculant	 Semi -improved variety (Tomato) Without Fertiliser	 Semi-Improved Variety (Tomato) with fertiliser
Surface Area/Flock size	No./Ha	100	100	0.25	0.25	0.25	0.25
1. Money-Out	ZMW/0.25ha/year	**2,411.25**	**3,711.25**	**836.50**	**1,418.50**	**3,274**	**5,000**
2. Money-In	ZMW/0.25ha/year	**3,200**	**12,545**	**787.50**	**3,300**	**3,640**	**10,500**
3. Profit or Loss? <u>Without risk</u> ☺or ☹	ZMW/0.25ha/Year	**788.75**	**8,833.75**	**-49**	**1,881.50**	**366**	**5,500**
Rank							
4. Profit or Loss? <u>With risk</u> ☺**or** ☹	ZMW/0.25ha/Year			**-49**	**1,881.50**	**366**	**11,000**
Rank							

What is a risk in agriculture?

The agricultural entrepreneur (man or woman) does not like risks because they are difficult to predict. However, one can determine during the planning what the impact of risks could be on revenues.

We use an example to learn this.

Market Risks	**Production Risks**
The market price of Village chicken may fall from ZMW 35 to ZMW 31.50 (for local breed) and from ZMW 80 to ZMW 72 (improved breed).	Serious Outbreak of diseases may reduce the poultry yields by 10%: - The yield of the local breed falls from 44 to 40 - The yield of the improved breed falls from 98 to 88 per cycle

Let us determine the impact of these risks on the success of our business with a small calculation.

The Money-Out does not change -- the money has already been spent.

	Unit	 Local Breed	 Improved Breed
Flock size	Number of Birds	100	100
1. Money-Out	ZMW	**2,411.25**	**3,711.25**
2. Money-In			
Yield (lower)	Number of Birds	40	88
Price (lower)	ZMW/Bird	31.50	72
Yield **x** Price of Sale	ZMW/Year	**1,260**	**6,336**
3. Profit or Loss? (Money In **MINUS** Money Out) ☺or ☹	SSP/ha		

Are the two risks acceptable?

What can you do to avoid the risk?

Register the result in the preceding table to compare the results with the situation without risk.

Main Lessons

1. Comparing profits of different crops and production techniques helps to make decisions on using the land to maximize revenue. This comparison is important to all agricultural entrepreneurs (man or woman)

2. Production decisions are based on these comparisons.

3. The good agricultural entrepreneur knows that a fluctuation in prices constitutes a risk on revenue. Risks are a concern for traditional as well as improved varieties and techniques.

4. To evaluate the impacts of this Market Risk, the entrepreneur calculates the Money-in with a much lower price ("pessimistic") than the current price (or last season's price). If the "pessimistic" profit can still satisfy the revenue objectives, then the risk is acceptable.

Module 7 Manage your money throughout the year

Bad management of money	➲ How does one know if the money is managed badly? ➲ What are the causes? ➲ How to manage money well during the year?

One should Plan! The person, who fails to plan, plans to fail!

First step: Foresee household expenditure

Below are the expenditures of a Household of 6 persons (2 children not yet in school, 2 children in primary school).

Can we foresee these expenditures? When is the money needed? Let's calculate how much money is needed for the household in one year.

Money Needs	**Can be foreseen**	**Period**	**Money-Out**	
			ZMW per month	ZMW per year
Matches 	Yes	Each month	3	36
Salt 	Yes	Each month	14	168
Soap 	Yes	Each month	60	720
Kerosene	Yes	Each month	20	240
Purchase food (relish) 	Yes	Each month	350	4,200
Mobile phone recharge 	Yes	Each month	20	240
Sub-total	Yes	Each month	**467**	**5,604**
School fees (500 ZMW per child, 3 times a year) 	Yes	January	3,000	3,000
Clothing 	Yes	December	300	300
Happy events	Yes	Once a year (March)	400	400
Total expenditure for household per year that can be foreseen				**9,304**

Second Step: Fill financial calendar on

- Let us put these numbers into a financial calendar. In the next page you will see the numbers calculated in Module 5.
- How much money is left at the end of each month?
- How much money is left at the end of the year?

Third Step:

Fill out the second financial calendar. The expenditures for Inputs and Labour are those from the Exercise Sheets in Module 5 – using improved practices.

Module 7 - Financial Calendar based on Income from current practices (ZMW) - Exercise

Money-Out	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Totals
Village Chicken (100 Birds)													
Inputs & Services	1,700							30					1,730
Labour		56.25						625					681.25
Soya Beans (0.25 ha)													
Inputs & Services				14	47.50						150	200	411.50
Labour	125				100							200	425
Tomatoes (0.25 ha)													
Inputs & Services			50		110		364						524
Labour			125	175	275	2,000	175						2,750
Household monthly	467	467	467	467	467	467	467	467	467	467	467	467	5,604
School fees and material	3,000												3,000
Happy events												400	400
Clothing												300	300
Total per month													15,825.75
Money-In	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	
Village Chicken								3,200					3,200
Soya Beans						787.50							787.50
Tomatoes							3,640						3,640
Total per month													7,627.50
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	
Monthly balance Money-In minus-Money-Out													
Cumulative balance													

Module 7 - Financial Calendar based on a farm using improved practices (ZMW) - Exercise

Money-Out	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Totals
Village Chickens (100 Birds)													
Inputs & Services	**2,130**	**30**	**530**	**30**	**60**		**2,130**	**30**	**530**	**30**	**60**		**5,560**
Labour	**56.25**				**881.25**		**125**				**800**		**1,862.50**
Soya Beans (0.25 ha)													
Inputs & Services					**110**	**46**	**50**			**400**	**390**	**110**	**1,106**
Labour	**25**	**12.50**			**150**			**50**		**12.50**	**62.50**		**312.50**
Tomatoes (0.25ha)													
Inputs & Services		**50**	**180**	**380**	**220**	**1,120**		**50**	**180**	**520**	**150**	**1,050**	**3,900**
Labour		**75**	**275**	**100**	**250**	**1,725**		**75**	**275**	**100**	**250**	**2,975**	**6,100**
Household monthly	**467**	**467**	**467**	**467**	**467**	**467**	**467**	**467**	**467**	**467**	**467**	**467**	**5,604**
School fees and material	**3,000**												**3,000**
Happy events												**400**	**400**
Clothing												**300**	**300**
Total per month													**28,145**
Money-In	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	
Village Chickens					**12,545**						**12,545**		**25,090**
Soya Beans							**3,300**						**3,300**
Tomatoes						**10,500**						**10,500**	**21,000**
Total per month													**49,390**
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	
Monthly balance Money-In minus-Money-Out													**21,245**
Cumulative balance													

Module 7 - Financial Calendar based on a farm using Current practices (ZMW) - Solution

Money-Out	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Totals
Village Chicken (100 Birds)													
Inputs & Services	1,700							30					1,730
Labour		56.25						625					681.25
Soya Beans (0.25 ha)													
Inputs & Services				14	47.50						150	200	411.50
Labour	125				100							200	425
Tomatoes (0.25ha)													
Inputs & Services			50		110		364						524
Labour			125	175	275	2,000	175						2,750
Household monthly	467	467	467	467	467	467	467	467	467	467	467	467	5,604
School fees and material	3,000												3,000
Happy events												400	400
Clothing												300	300
Total per month	5,292	523.25	642	656	999.50	2,467	1,006	1,122	467	467	617	1,567	15,825.75
Money-In	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	
Village Chicken								3,200					3,200
Soya Beans						787.50							787.50
Tomatoes							3,640						3,640
Total per month						787.50	3,640	3,200					7,627.50
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	
Monthly balance Money-In minus-Money-Out	-5,292	-523.25	-642	-656	-999.50	-1,679.50	2,634	2,078	-467	-467	-617	-1,567	**-8,198.25**
Cumulative balance		-5,815.25	-6,457.25	-7,113.25	-8,112.75	-9,792.25	-7,158.25	-5,080.25	-5,547.25	-6,014.25	-6,631.25	-8,198.25	

Module 7 - Financial Calendar based on a farm using improved practices (ZMW) - Solution

Money-Out	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Totals
Village Chickens (100 Birds)													
Inputs & Services	2,130	30	530	30	60		2,130	30	530	30	60		5,560
Labour	56.25				881.25		125				800		1,862.50
Soya Beans (0.25 ha)													
Inputs & Services					110	46	50			400	390	110	1,106
Labour	25	12.50			150			50		12.50	62.50		312.50
Tomatoes (0.25ha)													
Inputs & Services		50	180	380	220	1,120		50	180	520	150	1,050	3,900
Labour		75	275	100	250	1,725		75	275	100	250	2,975	6,100
Household monthly	467	467	467	467	467	467	467	467	467	467	467	467	5,604
School fees and material	3,000												3,000
Happy events												400	400
Clothing												300	300
Total per month	5,678.25	634.50	1,452	977	2,138.25	3,358	2,772	672	1,452	1,529.50	2,179.50	5,302	28,145
Money-In	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	
Village Chickens					12,545						12,545		25,090
Soya Beans							3,300						3,300
Tomatoes						10,500						10,500	21,000
Total per month					12,545	10,500	3,300				12,545	10,500	49,390
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	
Monthly balance Money-In minus-Money-Out	-5,678.25	-634.50	-1,452	-977	10,406.75	7,142	528	-672	-1,452	-1,529.50	10,365.50	5198	21,245
Cumulative balance	-5,678.25	-6,312.75	-7,764.75	-8,741.75	1,665	8,807	9,335	8,663	7,211	5,681.50	16,047	21,245	

Fourth Step: Discussion

Which situation is preferable? What changes are necessary?			With **current** production techniques per year (ZMW)	With **improved** production techniques per year (ZMW)
	Can be foreseen?	Period-month		
Money-Out for household	yes	each month	5,604	5,604
Money-Out for scalarisation, clothing, happy events	yes	different months	3,700	3,700
Money-Out for Production (inputs and labour)	yes	different months	**6,521.75**	**18,841**
Total money-out			**15,825.75**	**28,145**
Money-In from production	yes, but can change	different months	**7,627.50**	**49,390**
Money available for savings, other expenditure Money-In from Production and other sources minus Money-Out for Household and inputs			**-8,198.25**	**21,245**
Difference between the two situations (ZMW)				

Note: In this example all product from the farm is sold! We have not yet deducted what the family eats!

Attention

- Discuss the differences and which situation is preferable.
- What changes are needed?

Main Lessons

1. In the agricultural enterprise, expenditures (Money-Out) for the farm and the household are made each month, but the revenue (Money-In) comes only during the months of harvest or sale of produce. Therefore, there are months of the year where the expenditures are greater than the revenues. These months are called "**deficit months**."
2. For this reason, the good agricultural entrepreneur (man or woman) makes a financial calendar. He or she plans with the spouse(s) the expenditures for production and household needs.
3. To cover the expenditures in deficit months, the good agricultural entrepreneur saves money from the sales of produce ("surplus months").
4. Improved techniques can improve the revenues of the agricultural entrepreneur.
5. The needs for Inputs can be identified with calculations of Gross Margin and the Financial Calendar. This information can be used to make savings in a targeted way or to solicit credit for production.

Module 8 How to get good financial services

The financial calendars lead to a number of questions...

Savings

Saving is when money is put aside by an individual or household for use in the future. Saving can also be done in the form of investments, animals or land, which can be sold when cash is needed and is a way of building assets.

Why is it important to create savings?

- When saving in a bank account, the money is safe and/or might earn an interest.
- Savings in an account are often a necessary pre-condition to obtain a loan.
- With savings the agricultural entrepreneur can invest in his/her enterprise and thereby increase Money-In, for example, by buying improved seeds or fertilizer.

How can you create savings? What are the advantages and disadvantages?

	Hide money at home	Bring money to a bank/mobile money	Saving money in the SILC groups
Advantage	1. The money is immediately available. 2. There is no fees and bank charges	1. The money is safe at the bank/mobile account. 2. Having savings at the bank/mobile money may facilitate a loan from the bank/mobile providers. 3. Saving at the bank/mobile money reduces the risk of spending money impulsively because it is not immediately available.	1. Can be accessed easily 2. Low interest rates 3. Flexible payments terms 4. No monthly charges on saved or deposited money
Disadvantage	1. Money is not safe and can be stolen. 2. Money can be destroyed (by a fire, for example). 3. There is increased risk of making impulsive expenditures.	1. The money is not immediately available. 2. Bank services often attract a service fee.	1. Money is not safe and can be stolen 2. Money can be destroyed (by a fire, for example)

Paying money into your bank/mobile money account	Removing money from your bank/mobile money account
• Go to the bank/mobile agents.	• Think why you need money, and how much • Go to the bank/mobile agents.
• Fill out the deposit form/direct deposits at banks/mobile agents booths.	• Fill out the money withdrawal form/using your phone to withdraw.
• The deposit is registered electronically in your bank/mobile money account.	• The withdrawal amount is electronically deducted from your bank/mobile money account.
• Receive a deposit confirmation slip or phone message alert	• Message alert on your phone confirming your withdrawal

Saving money in the SILC groups	Removing money from SILC groups
• Plan amount to save on the meeting day	• Calculate total savings to-date
• Save during SILC meetings day	• Plan amount to borrow from the group
• Amount recorded in the group register book and signed by the member	• Sign in the savings register upon getting the money
• Keep your personal record each time an amount is saved in the group	Keep your personal record each time an amount is removed from your savings

Bank Deposits

Collection of money from the people

Commercial Banks, Savings and Credit Cooperatives, and some Microfinance Institutions (MFI) accept money from people who have, it to save or who are saving it from their income. They keep the money safe on your behalf.

The agricultural entrepreneur can put money into **current**, **savings** and **fixed accounts**.

What saving products are being offered by financial service providers/mobile money?

A **current account is an account for business people like you** Money put in this account can be taken out any time through the bank, ATM, or mobile money services.

A **savings account** helps you to save money and keep it safe or with the objective to get a loan. He/she can take money whenever need arises by going to the bank, or possibly through an ATM or mobile money. The bank pays interest on the money in this account every three months, every six months or every year. As an owner of a savings account you receive an ATM card from the bank to make withdrawal or a bank book into which money deposits and money withdrawals is recorded.

A **fixed deposit account** helps the agricultural entrepreneur or any other person/farmer to keep money safe and to earn interest, which can increase the investment. He/she can only take out his/her money at a time he/she has agreed with the bank, for example after six months. The money that is paid on top of the amount (interest) in this account depends on how long the money will be in this account. If for any reason, he/she wants to take out the money before the time he/she has agreed with the bank, the bank charges him/her a penalty fee. This type of account could be used by an agricultural entrepreneur or any other person/farmer to put in more money for inputs and implements.

When opening a bank account, the agricultural entrepreneur (man or woman) investigates what the direct and the indirect cost associated with a bank account might be:

Direct cost	**Indirect cost**
• Monthly account holding fees • Counter withdrawal fees • Costs for an ATM card • Costs of ATM withdrawal • Account opening and closing fees	• Know your Customer requirements • Travel time and cost to reach the nearest bank branch, agent, or ATM

There are many financial institutions which offer different services, with different fee structures. The good agricultural entrepreneur informs him/herself about the possible options for him/her.

What saving products are being offered by financial service providers/mobile money? Discussion with participants.

1. ……
   ……
   ……
2. ……
   ……
3. ……
   ……

Loans

What is a credit/loan and interest?

- A loan/credit is money you borrow from a person or a bank promising to pay back this money. This is a service you get, and you pay interest on the borrowed money. Money can be borrowed for a very short time (1 month to 12 months).
- Interest in the money you earn on your investment with the Bank or insurance
- Money can be borrowed for a short time (1 to 2 years).
- Money can also be borrowed for a long time (3 years onwards).
- Interest can be charged every week or every two weeks, every month or every year on the money you borrowed.

Reasons people borrow:

- To invest
- To respond to an emergency
- To consume

What are the responsibilities when borrowing?

- How did you feel when you lent something – anything – to someone that was not returned to you? What did you do?
- How did you feel when you failed to return something that you borrowed? What happened?
- When someone borrows something, what are their responsibilities as the borrower?
- What can happen if the borrower fails to meet their responsibilities as a borrower?

What is the difference between using your own money and using borrowed money?

Using own money	Using borrowed money
• Fewer obligations and responsibilities • No interest to pay	• A loan comes with obligations for the borrower, including repayment with interest and, in some cases, group membership. • More access to more financial capital • A loan costs money

The most common sources of loans are summarized below.

Microfinance institution	Informal lender	Loans from friends and family
		
Bank		

What to know before borrowing?

- Why do you intend to get a loan (purpose)?
- The sources of income and/or savings you need to reimburse the loan.
- When you will get the loan?
- The amount of your reimbursement, including principal amount (initial loan amount), interest and fees;
    - Usually, interest is charged monthly as a percentage on the principle loan amount in the informal sector. Banks usually use annual interest. Make sure that you really understand what the interest rate is, not only in a percentage but also in monetary terms;
    - Loan processing fees as a percentage of the loan principle.
    - Mandatory credit life insurance.
- That from the investment made of the loan money, you will be able to both repay the loan and make a profit.
- Understand the repayment schedule and the grace period before the first repayment is due.

When you apply for a loan, the bank or MFI will demand several things from you before they consider giving you a loan. Some requirements could be:

- A valid ID card;
- Proof of residence (e.g. utility bill);
- Some form of collateral or compulsory savings.

Depending from whom you borrow, the service fee and interest you will have to pay will vary.

Let us have a closer look at how a bank provides a loan. After applying for the loan, a bank will give you a letter telling you it has agreed to give you the money you have asked for. The bank also shows when you must pay back the total amount of money.

The agricultural entrepreneur as the borrower and the bank know the payments of the loan, including service fee, interest and repayment of the principal, and when all the payments are to be made. This makes planning simple for all.

Example

John is a farmer from Katete district of Zambia. He needs ZMW 15,000 to buy improve seeds for his Tomato Gardern and soybeans (0.5 ha). He decides to go to the bank to borrow this money.

The bank agrees to give John the money, but tells him that he must pay back ZMW 19,500 in 12 months (at 30% interest rate)

The ZMW 15,000 John borrowed is the credit. John will have to pay an additional ZMW 4,500 as interest (30%) for the money he borrowed.

The 12 months is how long it will take until John has to pay back the money.

There are two common types of loans

- Business loans
- Personal loans

Business Loan

This loan is given to business men and women like farmers to make their business (farming) better or to increase the size of their business (farm increasing from 1 hectare to 2 hectare). Business loans are given to groups or to individuals. Examples of business loans are:

Agricultural Loan:	E.g. a short-term loan that can be used to buy planting material, seeds, fertilizer, insecticides, and herbicides. Or a long-term loan that can be used to purchase agricultural implements
Expansion Loan:	This loan helps farmers to increase their farming business by increasing the cropping area. Other loans offered by commercial banks, can be, to purchase a Commercial Farm, buy tractor and other farming equipment or implements.
Other investment loans:	For other non-agriculture related businesses (expanding existing businesses e.g. groceries shops).

Personal Loan

This type of loan is not for business. It is rather used to buy things that are needed for the home like a solar system or to pay school fees.

Ways by which money can be borrowed

- The agricultural entrepreneur can borrow money as a single person (individual loan). In this case, the bank always asks for things like a building, a car or land to be put down, as collateral, before giving out the money. In case he/she is not able to pay back the loan, the bank can take possession of the collateral. If he/she pays the loan and the service fee back in time, the bank will be happy to serve him/her in the future.
- The agricultural entrepreneur can borrow money as a member of a group (Co-operative). The group can be a registered Farmers' Organization. If he/she pays back the loan and the service fee in time, the other group members will be happy to keep him/her in the group. If he/she does not pay back in time, the bank may require other members of his/her group to pay on his/her behalf or make it more complicated for other members of his/her group to borrow money.

The good agricultural entrepreneur pays back his/her loan plus the interest in the agreed time.

This way he/she can build a good relationship with the lender and make sure that next time he/she will get another loan at the same or maybe even better conditions!

Main Lessons

1. The good agricultural entrepreneur (man or woman) plans his/her expenditures and money entries all along the year to avoid shortages of money and unforeseen loans that are expensive.
2. To meet the needs of Money-In in deficit months, the good agricultural entrepreneur (male or female) makes savings with the surplus money from product sales. It takes discipline to do so.
3. Saving money with a bank or a micro-finance institution which is close by has the advantage that money is safe. Another advantage is that one is obliged to plan for expenses before withdrawing money.
4. To know which bank account to open and use, the agricultural entrepreneur inquires the conditions and associated cost.
5. There are different types of savings that offer various benefits. Banks and institutions of micro-finance provide information and advice to inform their customers.
6. There are different types of loans. The good agricultural entrepreneur looks at the various options and chooses the type of loan with convenient service fees and conditions for reimbursement
7. The good agricultural entrepreneur (male or female) takes a loan only when he/she is sure to be able to repay on time. For this reason, he/she plans the investments and expenditures required. The Gross Margin and the Financial Calendar are the appropriate tools for this planning.
8. Once a loan is received, the good agricultural entrepreneur (male or female) sticks to the objective of the investment. Otherwise, the agricultural entrepreneur is likely to have repayment problems.

Module 9 Earning more Money by Investing in Good Quality Seed

We have seen that you can make money with farming through good planning, improved techniques, quality inputs (seeds, plant nutrients), good agronomic practices and improved post-harvest management (drying, storage, marketing). Besides, an understanding of the basic calculations that help us make good decisions, including financial literacy and entrepreneurship, that has been covered extensively throughout the module.

Let us now see the issue of using good quality seed.

1. Good quality seed influences the yield of soybean and tomato.

What is good quality seed? What is your experience?	What are the benefits from quality seeds?
Good quality seed is clean! **No** stones, sand, debris, nor seeds of weed nor seeds of other crops.	Using such seed saves work because there are less weeds. 
Free from mechanical damages. Possession of good shape, size, colour, etc. according to specification of variety.	Such seed germinates well. 
Good quality seeds have been stored well and treated well.	Such seed germinates well.
Good quality seeds have an optimum moisture content of: Cereals: 10-12 %, Oilseeds: 6-7 %, tomato 10-11 %	They can be stored for a long time and still germinate well.
Good quality seeds are less infested by pests and diseases.	Such seed saves money less because less pesticide is needed. 
Good quality seeds germinate fast and uniform.	Less seed is needed. Less weeding is needed.
Good quality seed is perfectly adopted to the climatic conditions.	The crops are less stressed and achieve higher yields.
Desired genetic make-up (from high yielding, early maturing and disease tolerance plants).	Yield prediction is very easy. High profit per unit area. 

2. What yield trend do you observe when using own seeds? What yield trend do you observe when using quality seeds?

Good quality seeds can contribute about 20-25 % increase in yield.

The plant population is more uniform, and maturity is more equal and therefore easier to manage.

3. What are the possibilities to get quality seed?

The farmers have the following options to choose from:

- **Self-production**: This is when the farmers raise their own new generation seeds
- **Purchase**: Buy new generation seed from reputable seed producers and agrodealers, who follow the commercial production process.

10 rules for a successful self-production of quality grain and oil seeds.

1. Choice of good plot with fertile, well-drained loamy soil texture.

2. Prepare the field by ploughing, harrowing and ridging.

3. Source good, high quality seed from the plots that have produced the highest yields, other farmers or reputable seed producers.

4. Crop rotation and sowing of pure stands (no crop association).

5. Apply Good Agricultural Practices.

6. Careful weeding is important to minimize the contamination of the seed with weed seed.

7. Observe seed production plot and take out infested plants.

8. Threshing should be done carefully to avoid mechanical damage on the seed.

9. Seeds can be coated with pesticides and fungicides for a better protection. Post-harvest pesticides should also be applied on storage bags.

10. Store the seed in a clean, dry and proper room.

Purchase of new generation seed from reputable producers

The seed that reaches the farmers must be of the best quality possible.

What does that mean?

- The seed must correspond to what is written on the label
- The seed must meet the optimum agro-ecological conditions under the specific farming zone or region
- The seed must be of a good varietal purity and have a good germination rate.
- The seed quality must meet the certification standards
- Evidence of the producer having been supervised all through the multiplication process for the safeguard of the genetic purity, and
- The germination must have been checked before sale to farmers
- The suppler must be traceable (through lot number, physical address and contact telephone)

Main lessons

1. The good entrepreneur (man or woman) knows that quality seeds result in the more yields.
2. The Agricultural entrepreneur (man or woman) prepares for using new seeds
3. The good agricultural entrepreneur (man or woman) uses only registered or certified seeds from reputable seeds suppliers of improved varieties.
4. The good agricultural entrepreneur (man or woman) knows where he or she can purchase quality seed.

Module 10 Benefits from membership in farmer organizations

- What is the use of being in a farmer organization?
- What are the problems and risks of an organization that you know?
- How do you avoid these problems?
- What is your conclusion?

How can one know if a farmer organization works well?

➲ Existence of the group

- Members pay of annual contributions without pressure
- Members accept the costs (deductions on sales) without complaining

➲ Operation of the group

- Existence of Rules
- Existence of rules on the control of accounts
- Regular Production and presentation of reports
- The evolution of group activities (tonnage production, sales volumes of expenditure group purchasing of inputs) is positive

In the next section we will look at the advantages of being a member of a farmer organization.

Exercise 1 – Group Purchase of Inputs

Group purchase of inputs can help to negotiate lower prices as larger quantities are bought.

As an example, we assume that inputs can be purchased at a 10% discount through purchases as a group.

Let us see how much the benefit is for one group member, if all required inputs (seed, herbicide, fertilizer, pesticides, bags, etc.) are purchased as a group at lower price. Services such as land preparation, transport from field to house and to market is not to be included.

Calculation of benefit from group purchase of inputs – improved farming techniques

Module 10 Exercise Sheet Group sales

Let's calculate the additional profits obtained through group sales – in the case of improved farm production

		 Improved breed (Village Chickens)		 Improved variety (soya) with inoculant		 Improved variety Tomato with Fertilizer	
	Unit	Individual Sale	Group Sale 10 % price increase	Individual Sale	Group Sale 10 % price increase	Individual Sale	Group Sale 10 % price increase
Surface Area	Ha/flock size	100	100	0.25	0.25	0.25	0.25
1. Money-In	ZMW	**7,840**	**8,624**	**3,300**	**3,630**	**10,500**	**11,550**
Production	Kg	98	98	600	600	1,500	1,500
Price	ZMW/kg/Bird	80	88	5.5	6.05	7	7.70
3. Benefit of group sale	ZMW	0	**784**	0	**330**	0	**1,050**

Total Benefit of group sales	**ZMW 2,164**

Module 10: Exercise Sheet

Calculation of the profit of group purchase of Inputs – in the case of Improved farming techniques

Inputs can be provided less 10% less expensive through grouped purchase

		 Improved Breed(village chickens)		 Improved variety soya with inoculant		 Improved variety Tomato with fertiliser	
	Unit	Individual input purchase	Group input purchase with 10% Discount	Individual input purchase	Group input purchase with 10% Discount	Individual input purchase	Group input purchase with 10% Discount
Surface Area/number of Birds	Ha/Flock	100	100	0.25	0.25	0.25	0.25
Cost of Inputs	**ZMW**	**2,720**	**2,448**	**935**	**841.50**	**900**	**810**
Profit of group purchase	**ZMW**	**0**	**272**	**0**	**93.50**	**0**	**90**

Total Benefit of group purchase of inputs	**ZMW 455.50**

Total Benefit of group business	**ZMW 2,619.50**

What lessons can you learn from these examples?

Main Lessons

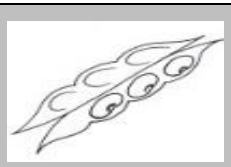
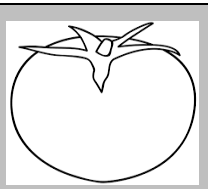
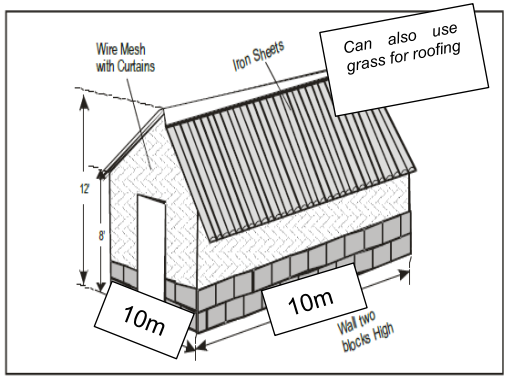
1. Agricultural entrepreneurs (men or women) form groups or associations to do things they are not able to do alone.
2. Groups or associations of agricultural entrepreneurs (men or women) have a common business objective. To achieve their common goal, the members learn together, from each other and support each other.
3. For service providers, it is easier and cheaper to work with farmer groups or associations than with individuals. A group of agricultural entrepreneurs (men or women) can more easily seek financial services or information on production techniques from extension.
4. For input suppliers, it is easier and cheaper to work with farmer groups or associations than with individuals. A group of agricultural entrepreneurs (men or women) can organize grouped purchases of agricultural inputs and can better prices from the input supplier.
5. For buyers of agricultural products, it is easier and cheaper to work with farmer groups or associations than with individuals. A group of agricultural entrepreneurs (men or women) can organize grouped sales of agricultural products like potato. The group can get better prices from the buyer – if the quality of the product is correct.
6. Associations or groups of agricultural entrepreneurs that function well have clear rules that are respected. When the rules are broken by members, sanctions are applied.
7. Good leaders of farmer associations play their role to improve the business of all members.
8. Agricultural entrepreneurs (men or women) that are members of well-functioning associations or groups do better business.
9. Agricultural Entrepreneurs that are doing better business with the support of their association pay their membership fees without reluctance.

Module 11 More money with Good Agricultural Practices (GAP)

Any Farmer must realise that productivity, good quality produce comes from a combination of production factors that include:

a. Weather pattern
b. Soil and environmental management
c. Access to quality and affordable Inputs and better market with good prices
d. Farming practices applied

Any of the above factor cannot singly manage to improve the productivity and produce quality but rather a combination of all the above. But one of the areas where a famer can invest is the farming practices being applied by adopting Good Agricultural Practices (GAP) that adapt to the current climatic changes. Some of the general Good Agricultural Practices (GAP) are listed below:

<table>
<tr>
<th>Poultry – Village Chicken  </th>
<th> 
Soybeans</th>
<th> 
Tomato</th>
</tr>
<tr>
<td>
• Construction of clean and appropriate livestock housing.
 

• Use recommended stocking of village chicken in the poultry house – 100 chickens in a 100m^2 (10m x 10m) using the semi-intensive system.
</td>
<td>
• Plan for seed to be planted – use of certified seeds such as Kafue, an early maturity variety – 3 months to maturity
 
</td>
<td>
• Use of certified seeds which are early maturity variety and long harvest days such as Tengeru – matures at 3 months and picking can last up to another 3months and can have two cycles per year
• Use of conservation agriculture practices when preparing in the main field – planting basins or ripping
 
</td>
</tr>
</table>

- Good selection of breed such as **SASSO improved local chicken which mature at 4months and can have two cycles per year**
- Supplement of adequate feed and clean water – 50kgs bags mixture of maize bran and sunflower cake for 100chickens per week (mixture of 35kgs maize bran to 15kgs of sunflower cake)
- Keep surrounding and inside the poultry house clean and dry by regular removal of chicken manure (at least twice per week) and replacing with dry wood shavings to reduce outbreak of diseases.
- Adherence to vaccination programme to reduce outbreak of diseases – follow a recommended timeline of vaccination (Newcastle at 2weeks and 12 weeks, fowl fox at 3 weeks and 13weeks, gumboro at 5weeks and 15weeks)

- Use Inoculant to stimulate nodulation in soybeans – 1kgs of inoculant per 25kgs of seed to be planted at 1lima
- Select the field which has good soil fertility and good drainage
- Use of Conservation Agriculture practices – ripping during land preparation, crop rotation, retention of residual in the field after harvest.

- Planting a recommended spacing of 45cms inter row spacing and 15cm intra-spacing.
- scout for pests and diseases before applying chemicals and use only herbal insecticides and pesticides such as neem tree chemicals in the picture below and **try to avoid the** use artificial chemicals. They can be harmful for human beings and the environment.

-
- Timely weeding possibly before planting using organic herbicide

- Apply manure in rip lines or basins two weeks before planting
- • Planting a recommended spacing of 45cms inter row spacing and 15cm intra-spacing
- scout for pests and diseases before applying chemicals and use only herbal insecticides and pesticides such as neem tree chemicals in the picture below and try to avoid the use artificial chemicals. They can be harmful for human beings and the environment.
- During harvesting, only pick ripe tomatoes and pack in well ventilated boxes

Module 12 Becoming an entrepreneur in Practice

The work templates have been presented to you in this session.

- What have you learned?
- What will you change?
- After this training what will you do to become an agricultural entrepreneur in practice?
- What do you need to succeed and do good business?

Ask for your FBS participation certificate with serial number and signature of your trainer

<u>Use the following templates to</u>

➔Plan production

➔Record Money-Out and Money-In

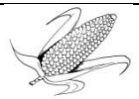
➔ Calculate whether you make Profit or Loss

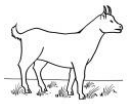
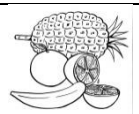
➔Plan expenditure and income from sales and

➔ Control the reimbursement of loans

6. Templates for application

Plan and evaluate production

Food Group	Food		Sell ☐	Eat ❍	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Grains, roots and tuber		Sorghum														
		Potato														
		Fresh cassava														
		Pumpkin														
		Orange Fresh Sweet Potato														
		Rice														
		Maize														
Legumes		Soybean														

Food Group	Food		Sell ☐	Eat ❍	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
		Groundnut														
		Cowpeas														
		Beans														
Foods from Animals		Village Chicken														
		Goat														
		Fish														
		Eggs														
Fruits		Oranges														
		Bananas														
		Watermelons														

Food Group	Food	Sell ☐	Eat ❍	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Vegetables	 Spinach														
	 Okra														
	 Amaranthus														
Fats and substitutes	 Sun Flower seeds														
	 Cooking oil														

Cropping calendar for plot 1

Size of the Plot (field)	Main Crop	Variety
	Associated mixed crop 1	Associated mixed crop 2

Work Planned	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

Tracking Money-Out for plot 1

Date	Reason	Amount « money out »
	Total	

Tracking Money-In for plot 1

Date	Reason	Amount « money in »
	Total	

Profit or Loss plot 1

Plot area : _____	**Unit**	**Expected before production**			**Evaluation after harvest**		
		Quantity	Price (ZMW)	Total (ZMW)	Quantity	Price (ZMW)	Total (ZMW)
1. Money-Out							
Inputs							
Total cost of inputs							
Labour (Man-Days)							
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
Total Labour needs and costs	MD						
Total Money-Out Costs of inputs + Cost of Labour			ZMW				
2. Money-In Production X sales price			ZMW				
3. Profit or Loss? Money-In MINUS Money-Out			ZMW				
4. Unit Cost (SSP/kg) Money-Out / Production			ZMW/kg				

Plot 2

Cropping calendar for plot 2

Size of the Plot (field)	Main Crop	Variety
	Associated crop 1	Associated crop 2

Work Planned	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

Profit or Loss plot 2

Plot area : _____	**Unit**	**Expected before production** Quantity	Price (ZMW)	Total (ZMW)	**Evaluation after harvest** Quantity	Price (ZMW)	Total (ZMW)
1. Money Out							
Inputs							
Total cost of Inputs							
Labour (Man-Days)							
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
Total Labour needs and costs	MD						
Total Money-Out Costs of inputs + Cost of Labour			ZMW				
2. Money-In Production X sales price			ZMW				
3. Profit or Loss? Money-In MINUS Money-Out			ZMW				
4. Unit Cost (SSP/kg) Money-Out / Production			ZMW/kg				

Tracking Money-Out for plot 2

Date	Reason	Amount « Money Out »
	Total	

Tracking Money-In for plot 2

Date	Reason	Amount « Money In »
	Total	

Plot 3

Cropping calendar for plot 3

Size of the Plot (field)	Main Crop	Variety
	Associated crop 1	Associated crop 2

Work Planned	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

Profit or Loss plot 3

Plot area: _____	**Unit**	**Expected before production** Quantity	Price (ZMW)	Total (ZMW)	**Evaluation after harvest** Quantity	Price (ZMW)	Total (ZMW)
1. Money Out							
Inputs							
Total Cost of Inputs							
Labour (Man-Days)							
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
	MD						
Total Labour needs and costs	MD						
Total Money-Out Costs of inputs + Cost of Labour			ZMW				
2. Money-In Production X sales price			ZMW				
3. Profit or Loss? Money-In MINUS Money-Out			ZMW				
4. Unit Cost (SSP/kg) Money-Out / Production			ZMW/kg				

Tracking Money-Out for plot 3

Date	Reason	Amount « Money Out »
	Total	

Tracking Money-In for plot 3

Date	Reason	Amount « Money In »
	Total	

Evaluate the production year

Plot number	Main Crop	Area	Money-Out	Production	Unit	Sales Price per unit	Money-In	Profit or Loss ☺ or ☹
1								
2								
3								
	Total							

	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5
Main crop					
Am I satisfied with the results of the year?	☺ or ☹	☺ or ☹	☺ or ☹	☺ or ☹	☺ or ☹
What is the most important change to make for the next year?					
What purpose has this change?					
How will I make this change? How much will it cost?					
How much money can I raise?					
Do I need credit?					

Managing money throughout the year

Planning of household expenditure

Financial Needs	Expenditures (SSP)	When
Matches		Monthly
Salt		Monthly
Soap		Monthly
Petrol		Monthly
Food		Monthly
Water		Monthly
Sub-total		Monthly
School fees		Once per year
Clothing		Once per year

Financial Needs	Expenditures (SSP)	When
Happy Events Christmas		December
Easter		March/April
Reserves for unforeseen expenditures		Monthly

My Financial Calendar for Planning

Money-Out

Crop		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
	Inputs												
	Labour												
	Inputs												
	Labour												
	Inputs												
	Labour												
	Inputs												
	Labour												
	Inputs												
	Labour												
	Inputs												
	Labour												
Equipment and tools													
Household													
School fees													
Happy Events													
Clothing													
Total Money-Out per month													

Money-In

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Other revenues												
Total Money-In per month												
Monthly balance Money In – Money Out												
Cumulative Balance												

Manage loan and reimbursement

Purpose of loan	
Interest Rate	
Date of loan	
Final Reimbursement date	
Amount received	
Amount to reimburse	
Date	**Amount reimbursed**

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