

KASENGE RIVERFORD ORGANIC CENTRE

Sustainable Organic Farming Course Part Two



**Notes taken during two weeks training session
July 2012**

Not for sale, or distribution outside CBM/CMaD

**“Whoever works his land will have plenty of bread,
but he who follows worthless pursuits lacks sense.”
(Proverbs 12:10)**

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FARM PLANNING

Esta Kiwazi Nassanga

You need three words when thinking about farm planning.

- **Farm**
- **Plan**
- **Me**

What is a farm?

- The growing and rearing of animals
- An area we have planted
- The growing of crops
- Cultivating food and planting plants
- Productivity
- A way of life

In order for a farm to be a way of life, it has to be sustainable. In order to be sustainable, it has to have these six things in place:

- Biodiversity. Bio = life; diversity = many. So when you are farming, don't just grow one crop, grow many. Farming one crop is called monoculture – this is not good. Any disease or weakness will wipe all your farm away in one go. You should have many crops to complement each other, and live for each other.
- Nutrient recycling. The motto of sustainable farming is “eat and you are eaten”. Dodo is eaten by the chicken; which is eaten by us. We die and return to the ground, and the maggots eat us. And the maggots are good fertiliser for the dodo. So, for example, use your chicken droppings to feed your pigs.
- Soil and water conservation
- Environmental protection. Be clean, keep a clean farm, rotate your crops, plant trees.
- Use locally available resources. There is no need to travel eg from Mbale to Mukono to buy mulch grass. Don't buy expensive nails – it is showing off, not farming!
- Best agronomic practice – buy the best seeds you can, and save them each year.

What is a farm plan?

It is an outline showing

- What do I want to do?
- Why do I want to do it?
- When do I need to do it?
- How do I put it in place?

What are your reasons to farm?

- Income
- Food security
- Preserving my environment
- Education and on farm research
- Agro-tourism
- Provide employment to my family and community
- Farming is my hobby and pastime
- Homestead and self sufficiency
- Upholding my family name
- Etc

Your objectives must be **SMART**:

- S** Simple
- M** Measurable
- A** Attainable
- R** Realistic
- T** Time bound

However good your vision is, if it is not practical, it is a dream. It has to be realistic. Planning on paper can be very flowery etc, but is not realistic. You have to be able to define what your goal is. It is no use saying “I want to eradicate poverty” – that is not identifiable or realistic.

A need could be that you are hungry, you need food. Your goal could then be to be a cassava farmer. Your objectives would then be to

- discuss this with people of similar interests
- proper seed selection
- proper preparation of your land
- think about when you would plant (seasons) and placing etc
- record-keeping

For example, if you start planting in January, nothing would grow – you know it is too dry. You need to plan. If you planted onions and lost them all, one reason could be the soil was too thick and there are too many insects. You did not plan properly.

Vision and Motivation

You have to have a vision when you farm. When you have got a vision, you must then have a need, a goal. Even if you don't cultivate, you can still eat in Uganda, there is food. People ask why Ugandans aren't rich – the reason is because there is not a need. If there was a need, they would work hard and they would be rich.

Vision is the wisdom to plan for the future

Motivation is the desire to take action

Vision without motivation is a dream

Sample workplan

GOAL:				
Objectives	Activities	Resources	Output	Market
Objective 1	1 2 3 4			
Objective 2	1 2 3 4			
Objective 3	1 2 3 4			
Etc				
BUDGET				
Items needed	Quantity	Cost per item	Total cost	Remarks
Sources of Funding:				
Foreseen challenges: Eg. Climatic changes Diseases and pests Farmers' love for foreign goods		Lack of farming skills & knowledge Labour requirements Natural calamities Lack of planning		
Achievements:				

Time Management

You have to consider time management. Manage the space and time in which things are done. When you have lots to do, you have to get up earlier, otherwise time will catch up with you.

Time management is the duration taken to do an activity. Why should farmers manage their time?

- changing seasons do not wait
- Time is money
- Farm profitability is only possible with timely planting, weeding, harvesting, timely pest & disease control, manure application etc

There are four time quadrants

	Important	Not important
Urgent		
Not urgent		

There are things which are important and urgent, but also some things which are important but not urgent. Equally, there are things which are urgent but not important. And finally there are things which are neither important nor urgent.

You need to decide which things fall into which quadrant and do the important and urgent things first. Then the urgent and non important. Then the important but not urgent. The non urgent and non important are time wasters – do not do them. You need to draw up a plan for your work and what you wish to accomplish every day. Develop daily, weekly, monthly, yearly plans. Set priorities for yourself.

The 5 Friends of Farm Planning

When – is this work being done?

Who – is doing it?

How – is it being done?

What – is being used to do it?

Why – is it being done?

If you always have good answers to all these questions, this is good planning.

Things to consider

- Don't buy land without a water source. A water source 5 miles away is inaccessible!
- Don't plan to rear chickens if you live near to a quarry – the noise means they will not lay eggs.

Also when planning, consider

- My family needs, not just my needs. ie, food, clothing, water, medical aid, shelter, land, latrine. Your family's needs may be different from other families'. It's personal, everyone has different circumstances.
- Production requirements. Labour, land, water source, tools, good enterprise selection
- Market. The family is the first market – the market is a motivation factor. If you plant 100 maize plants, you may get 200 cobs, sell them for 500/- each, you will make 100,000/-. This will pay school fees. Motivation makes you increase your desire.
- Biodiversity. If you don't consider biodiversity, time management and everything else, you are doomed! Vision is not production. The needs motivate us to work.

What do I need to make a plan?

- Current calendar
- Paper and ruler

- Pen/pencil
- Set goal and objectives
- Past record or data to determine right prices – seasons, seeds, production & markets
- File for proper storage of records
- A poor plan is no plan at all.

How do I make my farm help itself? How can one part of the farm help another part of the farm? There is no such thing as poor soil in a sustainable farm – think about the food chain. Plants become food for cows, we eat the cows, we get eaten, we decompose, we become nutrients for the soil which then grows more plants. To conserve water and soil, you need good compost, also intercropping etc. Use locally available sources, everything is around you. Do not plan for things which are not around you.

Invest in something that grows when you are asleep. One man may invest in a luxurious car; you can invest in your farm. His car deteriorates while he is asleep, your farm will grow while you are asleep.

Key components of a well planned farm

- Proper housing for the family – kitchen, toilet, animal units etc
- Paths for easy movement without trading on plants or animals
- Easily accessible water source
- Sheds in compound
- Security
- Wind breakers
- Record book
- Light
- Clothes line
- Pit
- Community development, ie proper sanitation, proper kitchen, drying board, family rooms separate from the animals
- Pot for drinking water
- Water for latrine area, a tip tap
- Trolleys for utensils
- Visitors' book
- Pump for animals and crops
- Fence
- Water harvesters
- Good drainage system

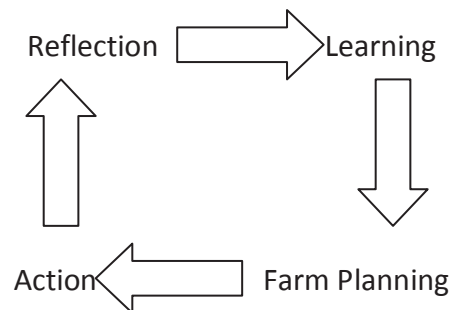
Benefits of a well planned farm

- Easier to manage
- Production is higher
- Improved standards of living
- Timely planting
- Saves energy and is cost effective

- Animals and crops controlled from thieves and protected from unnecessary movements
- Pests and diseases are easier to control
- Record keeping for future reference
- Study centre for research
- Creates ready market
- Creates employment opportunities

The Farming Cycle

- 1 Learning = knowledge and skills
- 2 Farm planning – set goal, vision and state objectives
- 3 Action – implementation, selection of viable seeds, farm activities (weeding, planting etc)
- 4 Reflection – evaluation (cost, labour, disease control) and way forward



Reflection means asking yourself questions that help you understand what you have learned and what you need to do next:

- Did I accomplish my goals?
- How did I accomplish my goals?
- What could I do differently next time?
- What was new that I learned from others?
- How is it related to what I already knew?
- What was difficult about working with others?
- What was easy?
- How did we make up groups and make decisions?
- What activity did I enjoy the most?
- What strengths did I find out about myself?

Time Wasters & their solutions

Time Waster	Solution
Laziness	Set timetables, goals, objectives, involve teamwork, be responsible to each other
Oversleeping	
Drunkenness	Don't drink!
Idleness	Follow the timetable
Going to parties	Only go to some
Rumour mongering	Don't
Negligence	Follow the timetable
Over producing children	Family planning
Sickness	Good feeding, hygiene
Aimless visiting	Only visit sometimes
Watching tv	Only watch tv when you're finished
Playing cards and pool	Only play cards etc when you're finished
Having too many debts	Don't borrow
Attending burials	Only go to those close to you, for 1 day
Attending political rallies	Be selective as to what you want to get involved in

Effective Time management means

- Set SMART goals and objectives
- Start **now**
- Encourage team work
- Develop training skills
- Keep proper records
- Set up a strict timetable
- Follow it and involve your family.

Introduction to Sustainable Organic Agriculture (SOA)

Sustainable – something long lasting, continuous put in place, well maintained, to remain there for a long time. Who sustains it? YOU DO!

Organic – anything that lives, dies, rots and turns into organic material

Agriculture – agros = soil, culture = cultivation. Agriculture is the cultivating of the soil and the rearing of animals. It is both an art and a science.

Sustainable Organic Agriculture is the type of farming which aims to satisfy the needs of the present generation while respecting nature, without compromising the environmental needs of the future generation.

It can also be defined as a method of farming whereby we use our natural surroundings intensively and extensively. This method minimises the use of chemically produced fertilisers, pesticides, growth regulators and livestock feed additives. In order to maintain soil productivity, fertility and to control weeds and pests, organic farming relies primarily on crop rotation, crop residues, animal manure, leguminous trees and crops, green manures and biological pest control methods. Organic farming emphasises enterprise integration, such that there is maximum relationship amongst the different enterprises on our farms.

Organic Farming

Don't use chemicals! Organic farming is a system of farming which uses natural surroundings eg. grass, leaves, trees, animal and human waste, water, ash, urine. Uganda is naturally gifted by God; nothing is missing in our country here. Nothing is expensive. There is no point saying "I don't have an animal". CBM are not going to give you animals, they are giving you knowledge via this course. Knowledge is wealth. You are not poor, you are getting knowledge. Who gets you from one step to another, from poverty to riches? YOU DO! Stop thinking you are poor, don't you have hands and feet? You have everything you need. Work hard!

3 steps to becoming an organic farmer;

- Stop depending on chemicals
- Look after the soil
- Encourage nature

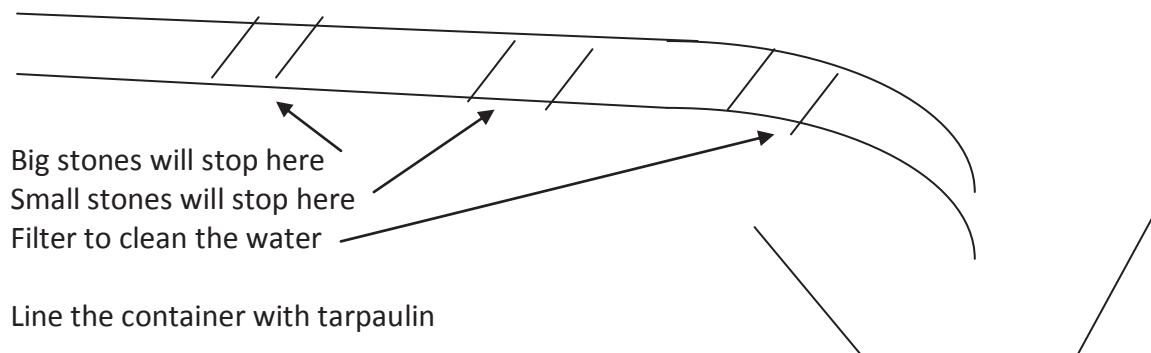
The basics of a model farmer

- Work on fertilised soils. Some parts are poor, some are fertile. Feed the soil, so that the soil will feed you.
- Use improved seeds. If you use poor seeds, they will not perform
- Look after good breeds of animals
- You must practice irrigation. You must collect water – put up guttering on your iron sheets and collect water in tubs

- Be market oriented. Look at the market first. Don't plant something people won't buy. The first market is your family, then your neighbours. Find out what is wanted. A model farmer will never starve.
- Be innovative, creative. There will be lots of things on your farm different from others. You will use your knowledge to add on things.

An easy way of collecting water

Dig a hole, and a trench going from it down into a container. Put filters along the trench to block large stones, then to block small stones, and then a proper filter to clean the water.



Pin a tarpaulin over the top of the container. The water collected in the container is clean but not safe. Treat the water collected with ash. Pour ash or crushed dried moringa seeds. This will purify the water.

Stages of Development in Organic Farming

Stage zero. Practising farming on unfertilised soil, using poor quality seeds, have poor breeds of animals, don't use manure and don't collect water. The only crops grown are cassava, maize, g-nuts and banana.

Stage one. "Cut rope stage". You have to cut the ropes to being tied in all the time to poverty. Cut the ropes. Start using improved seeds. Work on fertilising your soils, find good breeds of animals and birds. It is not easy to cut the ropes, but this is the road to development.

Stage two. Diversification stage. Improve all the existing projects on your farm. Create new projects, but don't forget to plan for them. Expand income generating projects.

Stage three. Integration. Each project depends on another. Don't lose anything – manure from cow can be used for compost on the garden which will then grow plants which can be used for fodder. Each project is integrated with the others, and you don't lose anything.

Stage four. Model farmer. Listen to the radio and find out when seminars/ workshops are being held in your area. Get specialist skills, start using specialist

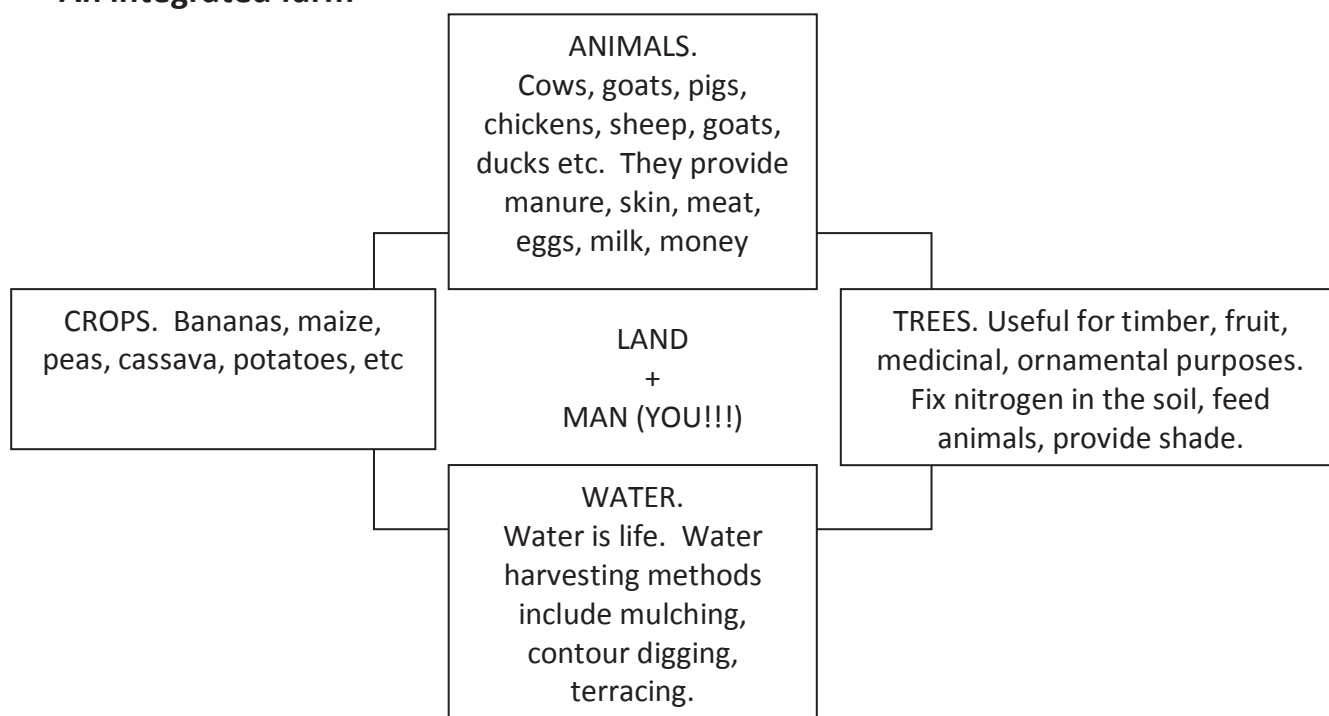
methods of farming. Use extension workers, gain knowledge from other farmers' experience. You become empowered. Every Tuesday in the New Vision there is a pull out section on farming. Buy it – you must collect as much information as you can, and use it. The whole process of integration takes into consideration the health and welfare of the producer (YOU!). This is important in the improvement of production.

A healthy farmer will be in the position to produce good, healthy crops. S/he will spend less on medication and therefore will be in a position to save and invest properly in the farm.

Why do we practise organic farming?

- It is very easy
- It is cheap
- It keeps the environment clean
- It stops the use of chemicals
- I can change the way I live

An integrated farm



Anyone who has land, no matter how small, has a farm. If you have land, you have a farm. Give your farm a name!! You have land, therefore you are rich.

Advantages of integrated farming system

- It enables a farmer to generate more income
- It improves on the farm production
- It involves all family members
- It improves the soil fertility
- It recycles the products

- It reduces farm costs
- It encourages proper utilisation of land
- It is environmentally friendly
- It is a tourist attraction
- It creates jobs
- It gives a balanced diet
- Everybody in the home is responsible.

Soil and Water Conservation Methods

(See Manual one for further information on this)

Soil is a living thing where living things live. Success in farming is determined by the state or nature, texture and condition of the soil. We conserve what we already have. We have land, therefore we have soil. Soil is the basis of production and is a gift of nature from God. It is a mixture of organic and inorganic materials, a composition of decayed materials. It is a living being, it breathes.

The texture and nature of the soil determines the success of farming. If the soil is poor, the production will be poor. Good soils produce good yields.

Components of soil

- Air. Soil breathes. Worms make tunnels through the soil, and it breathes through these tunnels. A good soil should not be compacted. If there are no tunnels then it is compacted and the soil cannot breathe - oxygen provides life to micro and macro organisms. It needs organic fertilisers (not chemicals!). If the soil is not breathing it is in a critical condition.
- Water. Water keeps the soil moist, soft, and provides water for the plants. A good soil retains the water, poor soil does not. Plants use water to carry out photosynthesis. Good soil should have the ability of holding and releasing water at a speed that enables the plant to use it.
- Organic Matter. Plants, animals, droppings. Anything that lies, dies and rots becomes organic matter. If you collect a heap of wandering jew together, or any grass, after some time you will get soil.
- Living Organisms. There are two types: Macro – these are insects which can be seen with the naked eye: eg, worms, centipedes, millipedes, termites, cutworms etc; micro – these are organisms which can only be seen with a microscope, eg bacteria, protozoa, amoeba, rhizobium (nitrogen fixer which helps in the decomposition of organic matter). The living organisms break down organic matter into fertile soil, and enable the plant to use the fertility. Micro and macro organisms improve the drainage of the soil by making tunnels in the soil.

All the above are very important for decomposition so that you can get good soil.

You need to maintain your soil so that you can benefit from good crops. If you don't maintain your soil it will not be fertile, it will be poor all the time. You have everything you need to maintain the soil all around you.

Causes of soil erosion that make soils poor

- Poor farming practices eg bush burning, over tillage, failure to mulch, mono-cropping, over-stocking, overuse of artificial fertilisers or inorganic fertilisers in our gardens that kill all the living organisms in our soil.
- Over grazing. You should not graze on your land for a long period.
- Mono cropping. You should encourage crop rotation.

Soil erosion is the process through which soil is carried away from one point to another by running water or wind and moving bodies. Water as an erosive agent is the major cause of soil degradation, and therefore must be stopped wherever possible.

The first layer which is carried away is the only one that can support life and so it must be guarded jealously. It is also important for the farmers to understand that soil erosion is possible to any farm although there may be variations in it, different degrees due to the different steepness of slopes and nature of the soil and activities in the area.

This means that all farms need to put in place conservation measures although the measures will vary due to different degrees of erosion.

Soil Conservation Methods

(Please see Manual One for further information on this subject)

Fertilising the Soil

Most people say their soils are poor – it is only because they are not fertilised. There are different ways of fertilising the soil:

- Compost Manure. Please see Manual One for detailed instructions on how to make compost manure.

- Crop rotation. You should practise crop rotation. If you leave the ground fallow for a year, you must plant bushes that are nitrogen fixers:
 - Calliandra – tree
 - Mucuna – weed
 - Lab-lab – weed
 - Tithonia – weed
 - Ficus –tree
 - Sesbania – tree
 - Albizia – tree

- Mulching. You mulch to conserve the water. When the mulches rot, they form humus – mix this into the soil, it is very very nutritious for the soil. You mulch in two ways – dry grass (dead mulching) and live crops (live mulching). Mucuna, jack bean, lab-lab are very good live mulchers. Put mucuna in maize plantations. Plant mucuna and lab-lab when it is almost harvest – they climb the maize plant. When you have harvested the maize, mix the husks with the mucuna and lab-lab; this will provide lots of nutrients for fodder. Don't plant mucuna in a banana plantation as it will take all the nutrients from the soil. Plant nitrogen fixers all around your farm. Calliandra is multi purpose. It attracts bees, and drags nitrogen from the air. It is good for fodder. Albizia also has flowers which attract bees. Ejjobyo is a good vegetable which also attracts bees.

- Green manures. There is a lot of nitrogen and nutrients contained in green manure. Don't burn your weeds – use them in the soil. Slash them, leave them on the soil, and dig them in after about 3 weeks. Don't use dangerous weeds.

- Manure teas. See Manual One for detailed instructions on this. Use animal waste or chicken droppings. Take 3kg of droppings, place in a sack with a large stone as a weight. Place the sack into a container, hang it from a stick. Cover the container to avoid flies. Shake the stick every now and then. After 21 days you will have very good liquid manure fertiliser. Sheep and goat droppings don't decompose easily. Cow dung and chicken droppings are the best. You can use it on all plants, but dilute it 1 part fertiliser, 4 parts water. Pour it on the roots, not on the leaves.

- Plant teas. See Manual One for further information on this. Use the green leaves which have nutrients and rot easily. Don't use leaves which are hard. Chop them into pieces, put into a jerry can $\frac{3}{4}$ full, add a handful of ash, fill with water and leave for 7 days. Dilute 1 part fertiliser, 2 parts water.
- Slurry. This a mixture of cow dung and urine/pig dung and urine. When zero grazing animals, collect the urine properly in the pits. Leave it for 14 days, it will be ready to use. You can also use slurry from a biogas plant if you have one.
- Only use liquid manures on plants in system, ie not when they are first transplanted. Use them on plants which are already growing. If you add the liquid manure when the plant is weak, you will just give the plants a boost, it won't fertilise the soil.

Also, planting trees and digging contours are two other methods of fertilisation. Plough across the slope along the contour bands rather than up the slope, and then plant the crops along the contours instead of up the slope.

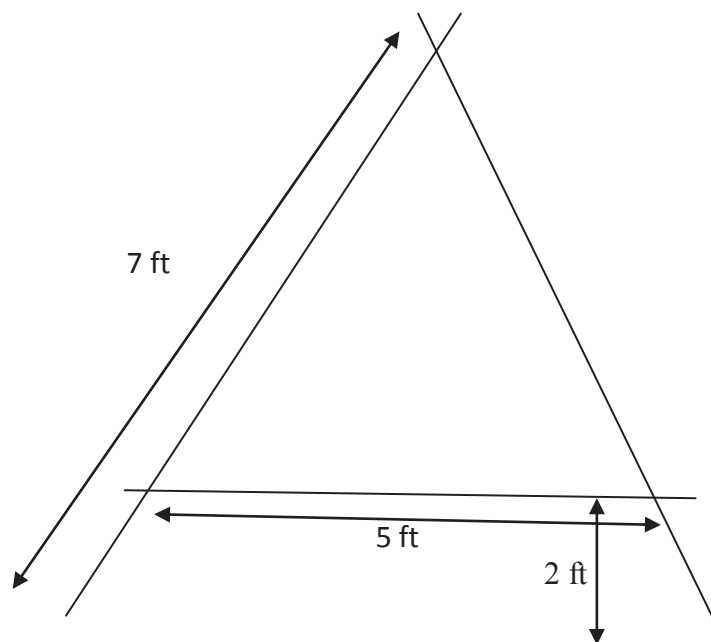
Making Contour bands

A contour band is a ridge made up of soil or other material, constructed along a contour. Contour bands must be measured before construction – measuring requires a tool which can be made, locally known as an A frame.

Making an A frame.

Please see Manual One for further information on this.

This is a very simple device that looks like an A. It is used for locating similar contour lines or levels on the farm during soil construction.



Hang a string from the top point with a stone at the end of it, and mark the middle of the horizontal stick.

To start your contour, place the A frame on the ground. Keep it upright, and without moving the first leg, move the second leg around until the string is hanging where the mark is on the horizontal crossbar. Mark where this second leg is with a peg. Now keep that second leg in the same place, and move the first leg around until the string is at the same place on the horizontal cross bar, and place a peg where the leg is now. Continue doing this until you reach the end of your plot. The pegs will show you where the contour is – they will all be at the same height on the slope. Fix string between all the pegs – the string will show you where you need to dig. You should curve the trench rather than have sharp corners.



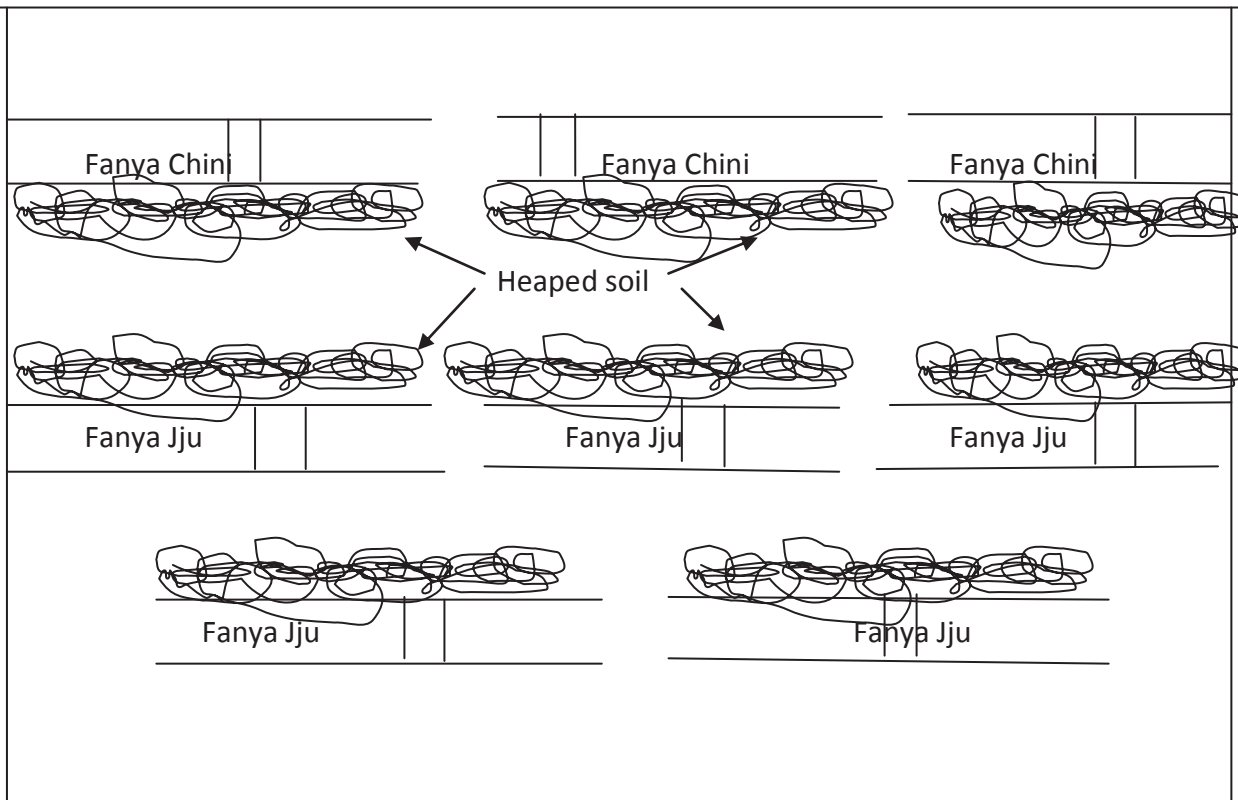
Fanya Chini and Fanya Jju.

To control soil erosion down a slope you have to reduce the speed of water running down it. A Fanya Chini will collect the water behind it and reduce the speed at which it then flows down the hill.

Dig a trench along the contour, and heap the soil from the trench on the downward side of the slope so that the water remains in the trench, and the speed is reduced. Dig a channel between the fanya chinis along the road.

The second trench and all other trenches down the slope will be a Fanya Jju – along the contours. Dig the trench, but this time put the soil on the upper side of the trench. The water will push the soil down from the chini to the jju and it will remain there. The fanya chini collects the water and reduces the speed at which it flows down the slope; the fanya jju controls the soil erosion.

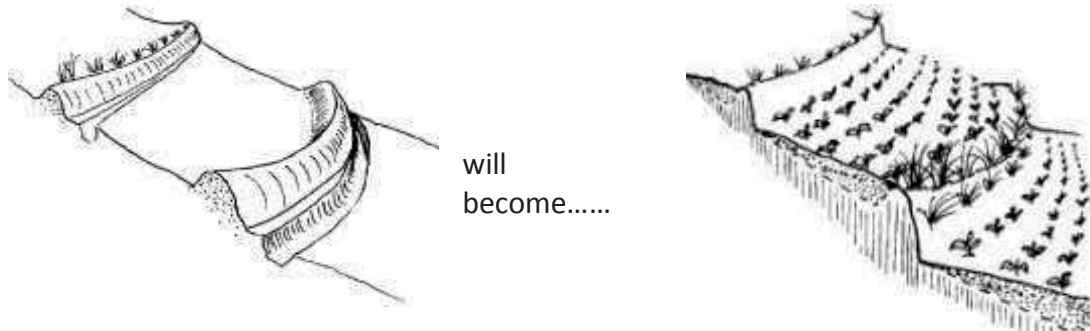
ROAD



On steep slopes the contours will be very close to each other because the water speed will be high, but on lesser slopes the contours will be further apart. You must dig contours all the way to the end of your plot, all Fanya Jju. These will help you to plan your farm as you can decide what to put where.

Width of the trench should be 3'. Depth should be 2-3'. 10 or 15' between each bridge. The bridges are for easy movement, and also they help the water to stay in that area.

Over time, the area of the Fanya Jjus will become flat, as the water pushes the soil down and the slope is lessened. The soil will be fertile.



Used by permission of International Institute of Rural Reconstruction

Contours should be stabilised by planting trees or napier grass, eg elephant grass. At the end of the rains, remove the silt from the trenches, and pour it on the soil.

In summary, organic farming does the following:

- It conserves and enhances the ecosystem
- It conserves and improves soil fertility
- It conserves water and helps us to recharge the underground water table
- It provides wholesome and safe food to the consumers
- It protects the health of the producer as well as increasing their income.

It is due to the above reasons that organic farming is termed as a sustainable and safe form of farming which is environmentally friendly, socially just and economically viable.

Record Keeping. Maliam Taupe

aciomaliam@gmail.com 0774 283894

Session Objectives

- To define record keeping
- To understand the importance of record keeping
- To know the different ways of record keeping
- To be familiar with the types of commonly kept records
- To understand the consequences of not keeping records
- To know the type of records we keep on the farm
- To have a uniform understanding of record keeping
- To be able to practise good record keeping

Why keep records?

- Records are needed for the future. They must be kept safe so they can be looked at in the future
- Input and output
- Financial records
- A future remembrance of our past
- In a business we need to know if we have made a loss or a profit
- It helps in monitoring
- We keep records for our children's future reference

Different types of records

Finance	Will	Business
Agreement	Birth, death	Attendance
Types of seeds	Medical	Marriage
Harvest	Documentary	Home affairs
Tools	Visitors' book	Income/expense
Debt	Friends	Sales
Yields	Minutes	Correspondence
Time	Inventory	Milk production
Ledger records	Etc	

Organisational records

Note – ALL records must ALWAYS be dated

Financial, eg bank statement. The bank statement must match with the accountability records you have been keeping – you can check the money you have received and the money you have paid out. You should always keep receipts.

Minutes. Minutes of meeting are so that you have a record of what was discussed so that you can prove to other people who weren't there what was decided.

Constitution – each member of the organisation should have a copy so that you can refer to it when you have disagreement. Don't just pick it up when there is a problem, use it all the time. Translate it into the local language. The CBM Uganda Handbook is an example of this.

Attendance records. These must be kept so that we have a record of who was at a meeting or a training event etc.

Workplans. These show you what to do when. They should be in our organisational files, and members should all have a copy. They should be on the walls in our offices – they guide the day to day running and show who does what.

Membership – we need an up to date list of current members.

Visitors' book. This is accountability. It shows how many times a visitor has come. It also gives us their phone number. Everyone should have a visitors' book in their homes, and in their churches.

Immunisation records. These remind you when you need to go back again. They also give details about each child.

Construction records – show how much money/labour/materials etc a building took.

Monthly/quarterly reports. These are reports of previous work done. You should always keep copies of them after you have sent them off.

Property – keep a record of what property belongs to the group, eg chairs, tables, etc. When there is a change of leadership, if you have no record of what belongs to the group and what belongs to the person, people will not want to return property they may have in their home. Records show what belongs to the group.

Memorandum of Understanding. This is not applicable to every organisation, but is for when you are working in partnership with someone else. The MoU lays out what you will do, what they will do, and what will be done together. Everything has to be detailed out very clearly in the MoU and then signed. It then becomes a by-law and you can be sued if you don't keep it. For example, if a condition of you having money each quarter is that you send reports, and you don't send reports, then you can be sued for not sending them.

Think about your family – examples of record keeping

How much is your daily expenditure? In total each day? And how does that compare with how much your daily income is?

- Families will use different amounts of money
- Expenditure may be higher than income
- Families consume different amounts of food
- Some families don't have supper or evening tea
- Record keeping will take away laziness!

- Expenditure is as per family needs
- You are crying of poverty because of lack of accounting!

You need to work out your daily expenditure so that you think eg. My field of cassava will bring in xxx but my annual spend will be xxx + ?? So you need to know how much more money you will need. Record how much your garden yields and record how much is taken home for eating and what that is in cash.

Poverty level is considered to be less than \$1 per day. That is 2500/- . Nobody here lives on less than that. So nobody here is living under the poverty level.

Agriculture is your backbone. You cannot afford to fail to keep records of consumption of what is eaten at home.

Your garden is planted with cassava and will take 6 months before it is ready..... you need to know when you planted it. Write the date down so that you know when the 6 months are up.

For the plants that need spraying – you need to keep records of when you spray and how much. Record it in your book, divide your book into separate sections so you can keep information about different parts of your farm separate.

Doing this will remove extravagance and share responsibility.

Work out your costs etc so that you can work out profit, but always forget to include family labour – you don't pay them cash, so you have to take their labour into account. Convert their labour into cash. Divide the cost by the number of people, or pay them according to their output, or by hour, or by size of plot. You all know how to quantify it – use the market price. If you pay by hour, you know how much can be done in an hour so people don't cheat. It will depend on the task.

Think how much money you are sitting on unknowingly. How much money you consume each day. Don't waste the resources you have – learn how best to use what you already have.

To do this requires record keeping.

Record keeping needs time, patience and commitment. Give it a specific time in each day to update your records. And do it every day.

Group work – fictional scenario

A group of women have a bakery. All the members assist in the baking, one member buys the ingredients and the firewood, another member is responsible for selling the bread at the market, and the treasurer is responsible for the money. However, the saleswoman does not keep records of what she has sold, she just brings the money to the treasurer. The treasurer does not give her a receipt, she just puts the money in a box. The treasurer cannot read or write so cannot keep records of money in or out. At the end of the month, the group comes together to split the money they

have made. However, when they open the cash box, there is less money than they expected. Nobody knows why. They accuse the saleswoman. They accuse the treasurer. Why were they quarrelling, and what has caused the problems?

The Treasurer could not read or write and therefore there were no records of money going in, or how much money was spent on what. The saleswoman did not get a receipt, or sign a receipt to show how much money she had brought back from the market. The women buying ingredients did not sign anything to indicate how much money the Treasurer had given them, and how much balance they had brought back. The women were hungry as they were baking the bread, and ate some of what they were supposed to sell. When they sold at the market, some people who bought said they would pay the next day, but then they forgot who said this. There was no accountability. They did not know how many loaves they needed to sell to make a profit. They had no business plan.

They should have kept records of incoming and outgoing money. There was no workplan, no vision. Nobody could remember transactions, so the saleswoman could not remember what she had sold when she returned. She should have written everything down as it was sold, and made a note of who owed money the next day.

The Treasurer should have a book showing money given out, and why. When the women came back with the ingredients they should bring the receipt and the balance. This should be recorded in the book. The woman going to market should sign to say how much she has taken with her, and the treasurer should sign to say how much she has brought back. The balance and the receipts should match the amount of money taken out. Every little thing should be written down, always.

If you don't keep records

- Your business may break down
- You will end up with debts
- Arguments and quarrelling will happen
- You will have difficulty in monitoring the success of your business
- You will lose income
- The group will be dismantled and it will cause division
- You will be liable to corruption
- You may end up in jail
- You will end up suffering famine

All this, because you have not kept good records. Keeping poor records is as bad as not keeping any records.

Farm Records

An example of record keeping to plant cassava

Date	Activity	Next date	Cost
11/7/12	Hiring a 1 acre garden		100,000
18/7/12	Bush clearing – family labour		40,000
24/7/12	Ploughing – family labour		55,000

28/7/12	Collecting cassava stems – family labour		20,000
29/7/12	Planting – family labour		10,000
29/8/12	1 st Weeding – family labour		40,000
30/11/12	2 nd Weeding – family labour		30,000
31/1/13	Harvesting		70,000
5/2/13	Transportation		60,000
	TOTAL		465,000

If you keep records you will know how much money it has taken you to bring the cassava to market. So, if you sell your cassava for 800,000, you know it will be good to continue doing this, you will make money. If you only sell your cassava for 350,000 then you will know you should not do this again. If you maybe sell it for 550,000, then you think it's not bad, maybe you will keep going.

This shows how important it is to keep accurate records. If you keep good records, you will know where you went wrong if you do make a loss.

Etiquette

Etiquette in agriculture means remembering that we all have what we call “acceptable behaviour”. What may be acceptable to one person may not be to another, so we have to remember to be aware of others’ cultures and “acceptable behaviour”. “One man’s meat is another man’s poison”.

Some different examples were discussed, from different parts of Uganda

Food

- When peeling potatoes, women must sit down
- Women have to kneel before they serve food
- Food and veg must be on one plate
- When women sow millet, they must go very early to the field – if anyone sees her, the millet will be bad
- Men should sit on chairs, women on the ground

Shelter

- A boy must put up his own cottage when he is 13
- The house of a married man can have a pillar in the centre
- It is not allowed for women to thatch the house, it is a curse
- A house with a pillar in the centre is a house for a witchdoctor
- Married women cannot come back to their father’s house
- Round houses are a kitchen or a shrine
- A woman with no children cannot own a house

Health

- Everyone must be clean, clean fingernails, cutting hair etc
- Every man must be circumcised
- Confidentiality is important
- Women must be humble and obedient
- A man must be circumcised before marriage
- All people must be taught sanitation

Education

- Every pupil must have school uniform
- All children must go to school
- Parents should dig roads so that children need not get muddy
- Cleanliness is paramount

Clothing

- At night a man must wear sports wear
- Traditional people wear bark cloth so they can be identified
- Respectable girls wear long frocks, a short one or trousers means they are “available”
- When people go to church, they must cover their heads

- Women must not wear trousers

Spiritual

- We must love God
- We must pray every day
- Cannot eat pig
- We must follow the 10 commandments
- The kingdom is coming very soon
- When someone is sick you have to provide

Spiritual/culture

- Polygamy is ok
- Give big goat after the birth of a baby
- Youth must be disciplined, they cannot enter their parents' bedroom
- Men must be circumcised
- Married women must be buried near the road
- When a child is born they must be given a local brew

We have to learn to live with each other, and be aware of one another's cultures. Culture is always moving however, and what may be acceptable now may not be in 10 years time.

We must conform to the bylaws of the place where we live.

However.....

As Christians, we must always be aware that our first allegiance is to God. Sometimes some of the things our culture demands go against what God tells us to do, and therefore we must ALWAYS follow God. For example men sitting on chairs, making the women sit on the floor. In the Bible we are taught that men and women are equal before God, and it is not right to make your wife sit on the floor.

Sometimes some things our culture tells us are just things which are made up, so that we can have our own way. Saying that women have to leave the house early to sow millet is just a way of making them get up early! To say that a woman with no children cannot own their own house is just a way of making them suffer even more. Why can they not own their own house??? To say that you have to sacrifice a big goat after the birth of a baby is just an excuse for a party and will put you in debt.

We have to continually ask ourselves when we do our cultural traditions – is there a sensible reason for this? Is God glorified by this? Or does it demean women/children? Is it contrary to what God wants us to do?

So, just be aware of what your culture asks. Be aware and constantly ask yourself whether it would be pleasing to God.

BeeKeeping Walude Mutwalibi

mwaludde@yahoo.co.uk 0772 524832

We cannot isolate bee keeping from crop growing or animal management. It is done alongside other farm activities. You cannot farm without keeping bees – nature maintains itself without you knowing it. Our forebears used to harvest honey in the bush, which we can't do because we are urbanised. Bees will disappear if we don't look after them.

A Fanta bottle of honey will raise 15000/-! There are two things which define the quality of the honey:

- How the bee keeper has handled the honey going to harvest
- The dominating flowers in the area

Most bee farmers make hives and keep bees for the honey which they produce. But they do not know very much about how their bees live and the honey which they collect is usually dirty and of poor quality. They do not know the volume of the beeswax which is often thrown away. And when they collect the honey, the bees are smoked out and driven away from the hive and a long time often passes before a new swarm comes to the hive. Let us first learn something about bees and their habits.

There are about 50,000 bees in one hive. They often travel up to 7 miles away, but still know where to return.

The best way to learn about bees is to ask somebody who keeps bees. If you want to keep bees you should read a number of books about bee keeping and get advice from experienced bee keepers. Not very many people keep bees because it is difficult to do, and many people are afraid of bees.

Keeping bees requires knowledge and experience if it is to be done well. This knowledge and experience can be obtained by observing and learning from an experienced bee keeper or through study and practice. Once this has been achieved, a well qualified bee keeper can produce bee products.

Even if someone knows exactly how to keep bees, the products s/he produces may not meet market demands and thus may not be able to provide a sufficient income. It is important to realise that the products have to be bought by others who determine what needs must be met in order for the products to be worth a certain price. One of the most important market demands is quality. A product has to be consistently good. It also has to be free of impurities and additives. It also has to look good.

To start keeping bees does not cost much and you do not have to pay to feed them because they get their food from plants/trees nearby. You will have to buy or find a

swarm. You will only need equipment like a bee hive, smoker and protective clothing. You can make all these yourself.

Bees

The Queen Bee, or Female

There is only one queen in the hive. She remains in the comb and does not go out to work. Her sole duty is to lay eggs in the comb. The queen bee normally lives 3-5 years. If she is looked after properly, she can live longer. If you have a high producing beehive, you can take a queen from it, groom it and put it into another hive. This involves high technology however because each queen has an individual smell. Nature is very complicated. She has a sting, but she only stings other bees.

The workers

These are underdeveloped females, which make up most of the swarm. They do all the work of the hive – building the comb, feeding the larva and the queen, storing up honey in the comb for use in the future, ventilating the hive etc. Workers only live for about 62 days. They are trained to attack and use the compass. When they sting, their venom can be collected for medicinal purposes for people who are allergic to them. When it stings, the nervous system of the bee gets cut, and it sends a smell to other bees that it is angry, and they also come to help it. The worker bee has two sacs in its body – one for carrying food, one for collecting nectar. To fill one cell in the honeycomb, the bee has to go out of the hive to collect nectar 60 times.

The drones, or Males

These, strange to say, come from unfertilised eggs. They have a mother but no father. They do not work and only a few 300-400 are allowed by the workers to live, the remainder are killed off.

The whole role of the drones is to fertilise the young queen so that they can start to lay eggs. After a drone has fertilised a queen it dies. Nature allows a large number of drones to be produced in order to make quite sure that young queens will be fertilised in the same way a flower produces a huge number of pollen grains in order to make sure the seed and new plant will be produced.

The queen is longer and has a larger abdomen than the workers or drones, but the sucking mouth parts are less developed as she does not use them. The large compound eyes are smaller than in the drone. There are no pollen baskets on the hind legs (the pollen basket is a little cavity or basket on the hind legs of workers in which pollen is collected as they go about amongst the followers).

The drones are usually dark in colour, with a rounded abdomen and no pollen basket. They make a loud buzzing noise as they fly but have no sting. The workers have a barbed sting which remains in the skin of a person stung and a well developed mouth – parts in the form of a little tube with which they suck up the nectar of flowers.

The young workers make the six sided cell which form the comb. The cells are made up of wax. The wax is added by the young bees crowding together in the hive until

the temperature goes up, tiny pieces of wax are then given out from the abdomens of the bees and are removed by the hind legs. The bees mix these wax scales in order to obtain the substance with which the comb is built. The old worker bees make honey. They fly far in search of flower nectar which they suck up and store in the cells as honey. The workers also bring pollen proportions and drops of water into the hive. Pollen is used for feeding the larva.

Propolis is a sticky glue obtained from the young shoots of trees and used by the bees for plastering up any cracks or holes in the hives. The workers live such a life that most of them live for about six weeks only.

When an egg has been laid in a cell by the queen it hatches out in about three days into a white legless larva or maggot which is kept well supplied with food by the worker. After eight days the larva enters upon its resting stage and the worker caps over the cell with wax. Ten days later the pupa has changed into a full grown worker bee with wings, legs and sucking mouth parts. It comes out from the cell and soon starts its work for building comb and fetching honey. Cells containing larva or pupa are called brood comb while those used for storing honey only are called honey combs.

Young queens can be produced at will of workers. They come from the fertilised eggs just as young workers do by means of specifically rich feeding with the queen jelly. The workers can use the larva to become a fully developed female queen instead of a worker or partly developed female, should they desire. A larva which is to become a queen is fed for 5 days and the pupa for 20 days in a large protruding cell which is easily recognised by the bee keeper. Shortly after the hatching the young queen flies out of the hive, is fertilised by the drone and at once returns and starts egg laying. It is estimated that as many as 3000 eggs a day may be laid. These turn into workers or queen. The drones fly out with the queen when she flies from the hive, and only the fittest mates with her. Once the drone has mated with the queen, it dies. Most research says that she mates only once, but some research says she mates 10 times. If the queen has not been fertilised, then the eggs she produces become drones. Drones are always produced towards the end of a queen's life when she has become old.

Swarming

Swarming takes place when the hive becomes over crowded. The workers see to it that young queens are ready to come out of the brood cell just before swarming takes place. The old queen flies out of the hive and takes a great number of workers and some drones with her. This is a great excitement and buzzing. Sometimes the swarm may fly a long distance before settling.

The queen lands on the branch of a tree, and the others cluster around her. At this time the swarm may be quite easy to capture. Place a wooden box under the cluster, shake or cut off the branch, and the bees will fall down on the ground, but with a stone under one side to allow air, and also stray bees to enter. The box should be kept shaded with leafy branches. If it becomes too hot, the bees may fly

off again. Later in the evening, the captured bees should be put into their permanent hive. The best time is after sunset but before darkness falls.

Place a sheet of cloth on the ground and put the hive on it, raising it up on a stone. Lay a piece of smooth clean board (about 5m wide) from the sheet up to the entrance of the hive to act as a ladder for the bees. Shake the bees out of the box onto the sheet near the foot of the ladder and the bees will soon begin to enter the hive as bees always like to climb upward and they will be only too glad to find a comfortable home. The queen of course must be present – if she is not, the bees will leave the hive again the next day. Swarming bees sting a little before they start to swarm, they fill themselves with honey and it is difficult for them to bend their abdomen to get it into the correct position for stinging, so avoid any sudden movement and a few stings will be received. It is only when a bee is frightened and thinks it is in danger of its life that it can sting.

In the old hive, one or more young queens soon hatch out. The workers may allow the first queen which hatches out to slay all her sister queens. However, sometimes if they are still too numerous in the hive, the first queens to hatch lead other swarms from the hive in intervals of about 9 days. Once the proper number of bees in the hive has been arrived at, then only one queen will remain, and will kill any remaining virgin queens.

A bee keeper who wants only to produce worker bees may cut out the queen cell from the comb to prevent swarming. If the first or primary swarm has to take place, he may cut out all the queen cells but leave one in the old hive in order to prevent further swarms coming out.

Hives

The comb formed by bees is of two kinds – the honey comb consisting of cells in which pure honey is stored and the brood comb consisting of cells containing larva and pupa which are hatched out. In the ordinary kind of native hive which is usually in the form of a hollowed out log, there is only one room or chamber for the bees to work in and when the bee keeper cuts out the comb both the honey comb and brood comb are mixed together and honey obtained is usually impure and dirty. Wild bees often make their nest in a hollow tree of trunks and if these nests are examined it will be found that the honeycomb is usually separated from the brood comb and above it. Accordingly an improved kind of native bee hive has been produced by the researchers. See below for diagrams.

Setting up the Apiary

Good honey production begins with the right choice of apiary site. One should pay attention to the following points:

The choice of Site

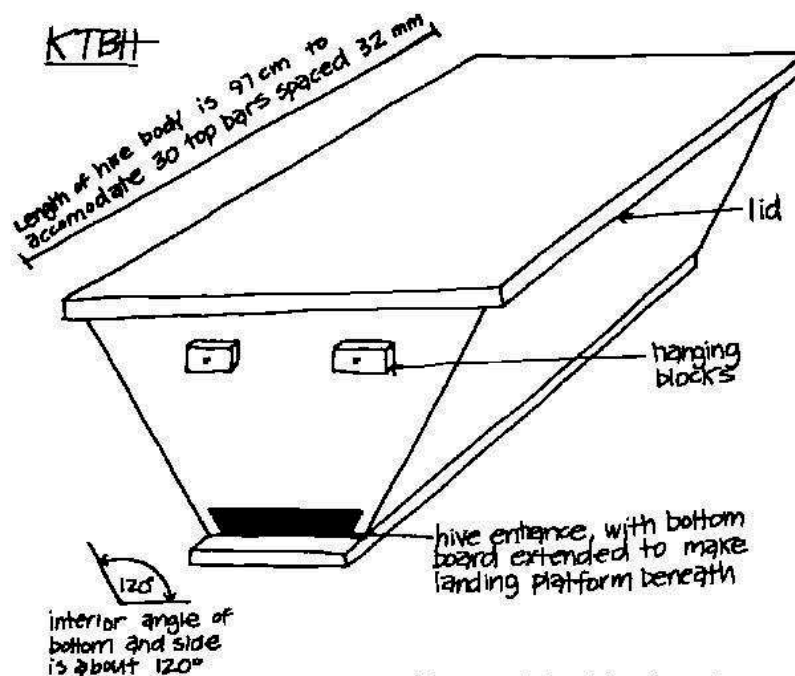
Even if you don't have land you can afford bee keeping.

- You can just use a pot
- Or you can make one, as per the diagrams below, or Appendix 1

- The site must be in an area where there are several sources of nectar within the radius of about 1km. Although bees cover a distance of 3km it is preferred to place the hives in the middle of bee forage plants. The shorter the distance the bees have got to fly, the less energy is lost and the higher the honey production.
- The site must not be water logged in the rainy periods. The reason being that honey is hygroscopic ie it has the tendency of absorbing moisture from the air.
- There should be some source of water eg. a river, or pond near the apiary for the bees
- African bees are very aggressive. The apiary should not be too near inhabited areas or areas where there are regular agricultural or livestock activities.
- The apiary should not be too far from the home of the bee keeper so that there are regular inspections of hives.
- Don't put the hive near a school, or a church, or a mosque. If you are using communal grazing land, you must agree with the other people. You should always tell the LOC, and it is good to tell the local agricultural officer too.
- The Government pays for agricultural extension workers in your area – do you take advantage of this???? You should ask them for advice, they may even give you free hives. The Ministry of Agriculture has different specialists in each sub county, who will give advice freely.
- If you have land eg 3 acres, put it in the middle.
- Always put a sign up in English and also the local language to notify everyone that bees are near.
- Do not put your hive near a swamp

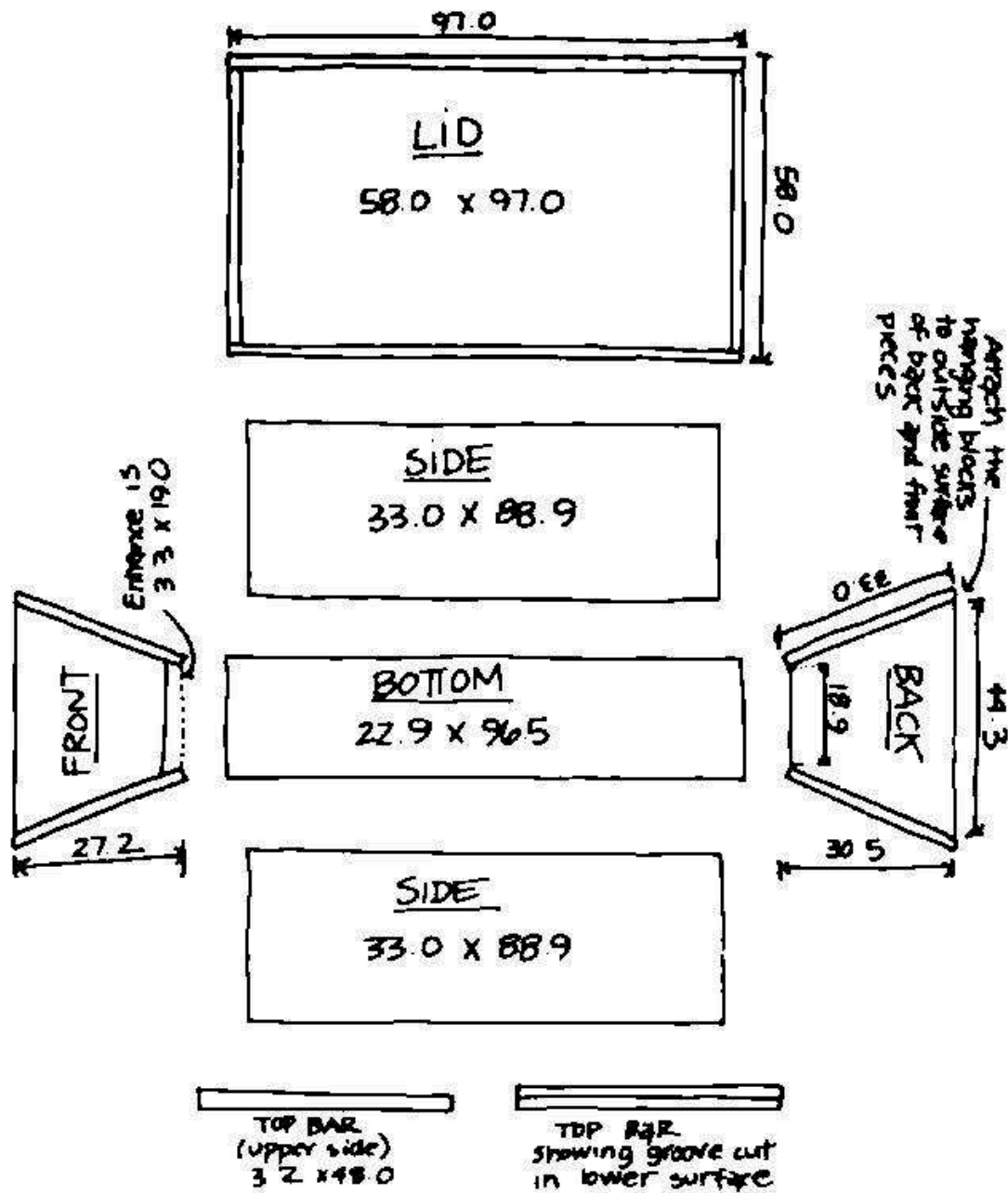
Making Hives

The simplest kind of hive is a wooden box with sticks across the top for the bee to build their honeycombs on. Most bee keepers use 3 or 4 boxes of top bar bee hives.



*Prepared by Rob Kingsolver.

KENYA TOP BAR HIVE (KTBH)
 dimensions in cm, based on 1.9 cm lumber

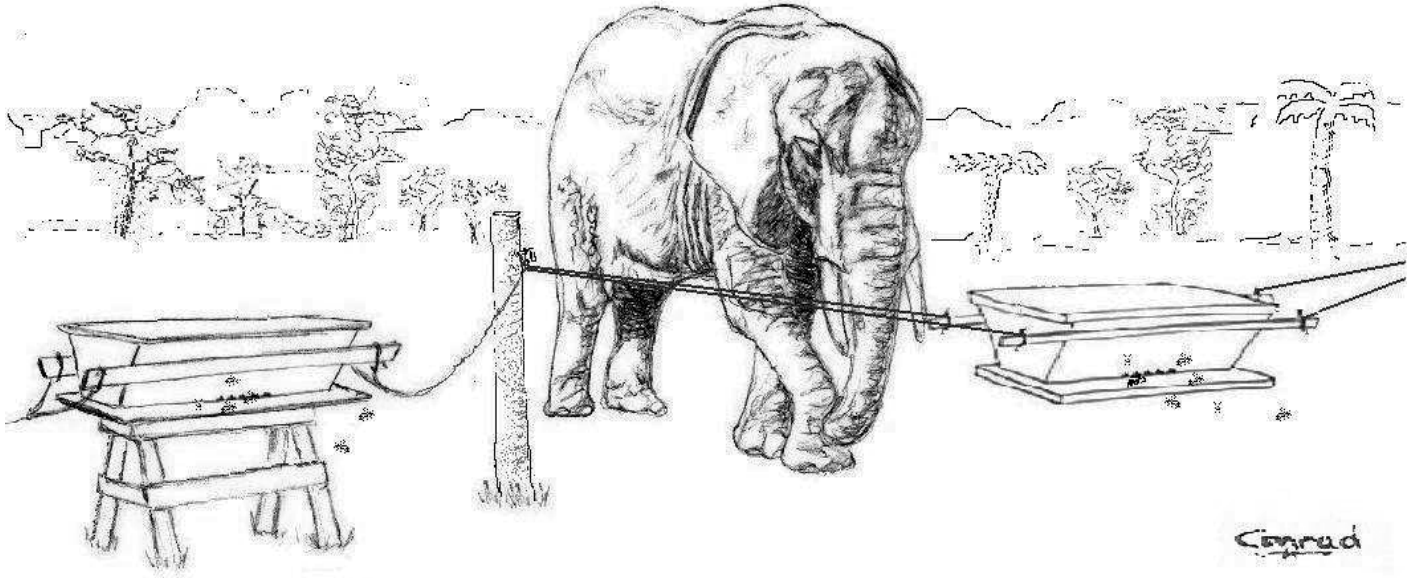


Both diagrams used by permission of Conrad Berube

Placing the hives

- Your hive must be in a place that has enough food for the bees. Bees can feed on any plant which has flowers – trees, crops, wildflowers etc
- The hive should be in a quiet shady place. If children or animals are near the hive it should be fenced off otherwise the bees may get angry and attack.
- You can hang the hive on wires hung between poles.
- Cut the weeds and long grass around the hives
- Bees need water but don't just give the water in a bowl – you need to put a stone or piece of wood in the water that helps them not to drown.

- The bar hives must not be hanged or suspended high up in trees or branches. But they are best put between two poles or trees where a bee keeper can work with the bees whilst standing to the ground.
- Traditional hives are better installed in between two forked poles.



Used by permission of Conrad Berube

Protecting the Hives

- From the Sun. The hives must always be protected from the hot sun. There are two ways of doing this.
Place the hives in or under the shade. If there are no trees, you are advised to plant shade trees like *Ekebergia rueppeliana* (Bumet), Sebei (Gusira or Musalamumali), Lumasaba, *Cordia Africana* (Mugengere) Sebei (Shikikili). Lumasaba will provide nectar as well as pollen. Do not use the shade of mango trees or jackfruit else the fruit may fall onto the hive and break it. Put hives closer together and build a shelter or shade thatched with local materials available.
- From the Wind. Place the hives with their flight entrance away from the prevailing wind direction. It is a good idea to plant a hedge row of *Luceana* or Kelapple around the hives to give protection from domestic animals as well as raising their flight and prevent the bees from drifting. Keep the hedge about 7 feet high.
- From the Rain. All hives should be covered with either corrugated iron covers or covers made from banana fibres or grass. But it is better if a shade or shelter is constructed.
- From snakes. Slash around the hive every evening to get rid of snakes. There is also an animal called harugaba which eats young bees. If you slash each evening, you will clear these animals away.

Attracting the swarms

Existing management practices of securing swarms in these districts is not common. Beekeepers secure swarms by random hive occupation by siting baited hives. Hives

are baited by using old wax combs melted and smeared in the hives or put on bars of the hives. This siting of hives may be done before or just at the end of the rainy season, this is the time when colonies of bees are swarming or migrating. Swarming is a natural process whereby a colony of bees divides so that part of it leaves for a new home, usually with the old queen, while the remaining members continue in the old home with a newly emerged and later mated queen. In this way a single unit becomes two.

The use of a catcher box

This is a small bee hive built on a design resembling a bar hive used to catch bees and temporarily house them until they are transferred to a hive. They are used for the following

- To catch bees in remote areas which are suitable as permanent locations for hives
- To catch swarms in areas where bees are plentiful
- To stock hives in areas where bees are scarce and also in bee houses
- As an extension aid, catcher boxes with few combs and bees may be used for simple demonstrations to farmers and extension workers.

Directions for using a catcher box

- Place the catcher box in an area where swarms are likely to pass. If possibly it may be placed high in a tree.
- When bees enter the catcher box it should not be moved at least one week.
- After one week the catcher box should be moved gently and placed on top of the permanent box into which it is to be transferred. It should be left in this new position for another week. The bees may now be transferred to the new hive by lifting the top bars one by one out of the catcher box and placing them into the new hive.

Harvesting honey

Honey that has been stored in the cells of combs and capped by the bees is good quality honey which can stay for years without getting spoilt. Proper harvesting, use of clean, dry containers and appropriate packing materials helps keep the quality of honey high for both export purposes and domestic use. Honey that has just been harvested is warm, so it is very important to strain your honey soon after harvesting to ensure easy flow of honey from the cells.

You can harvest your honey 4 times/year.

Workers construct the comb from the entrance first. They also build a queen extruder which means the queen cannot get through to the back of the hive. The front of the hive is the brood chamber, and the back is the honey chamber. The queen lays eggs in the brood chamber, the workers store honey in the honey chamber.

For simple home harvesting of honey

- You need clean, dry containers with tight fitting lids, buy two, one large and one small. Put holes in the bottom of the big one.

- Make sure that your hands are very clean, and so are the containers. Do not lick your fingers!
- You need a straining cloth – a net cloth of 60 holes to 1 sq inch. This is folded about 4 times
- You need a smoker – use dry grass and wet grass together to produce smoke
- A clean and bee tight room
- Go in the evening when there are less people.
- Using your smoker, smoke the bees so that they are sleepy and less likely to sting
- Open the hive, and just pull out the honey chambers, not the egg ones
- Remove any bees that are in the honey chambers with a soft brush.
- Uncap the honey comb cell from the lid using a hot knife or fork.
- Put the combs in little pieces overnight into the larger pan, and put this on top of the smaller pan. Over night the combs will empty into the smaller pan.
- Next day remove the empty combs – boil them up and filter. The liquid can be given to animals. With the rest, heat it slowly and then let it go cold. It will be beeswax to sell.
- Skim off the scum on top of the liquid honey
- Pack in clean dry jars and cover ready for use. 1 comb will produce 3kg of honey. Each hive has about 10 combs in.

Please note that liquid honey that has granulated or crystallised in a jar can be liquefied again by warming the jar of honey in a water bath, constantly stirring the honey to prevent overheating. Temperatures above 45degC will overheat the honey and spoil the quality of the honey thus reducing its shelf life.

Besides honey and beeswax, other bee products are propolis, pollen, royal jelly and bee venom.

Creating a new hive

- To create a new hive, make another with the exact same dimensions.
- Put combs with eggs already in, less than 3 days old, and 2 honey combs into the new hive.
- Leave the queen in the old hive.
- Put the new one where the old one was, and the old one in a new place, more than 6 metres away
- The bees inside the old one will continue to protect their queen.
- Any bees outside when you move the hives will return to the new hive (thinking it is the old one), realise there is no queen, and go to improve one of the eggs.
- 13 days later a new queen will hatch.
Your new hive will be produced.

Honey can be used as a spread on bread, a dressing for fruit and vegetable salads, a sweetener for juice, beverages and porridge, confectionery, baking, cosmetics and pharmaceutical industry etc. If you have a sore throat, mix honey with onion - a juice will form overnight. This juice is a good medicine.

Nursery Establishment

Dorothy Nakalembe

What is a nursery?

- A place where young seedlings are prepared before taking them to the main garden
- A prepared garden where we put the seeds before they become seedlings
- A place where young plants are kept before transplanting in the main garden
- A place where plants are prepared for sale
- A place where young plants are given special care

A poorly constructed and managed nursery bed will lead to poor germination or diseased seedlings. The seedlings may fail to grow when transplanted.

Different types of nurseries

- Permanent. This is when you are going into business – like the ones that you see along the road
- Temporary
 - preparation for plants going to go into the garden
 - transplants
 - some are temporary and movable, made out of timber, jerry cans etc

Before you establish your nursery bed, you have to consider

- Site selection
- Size and measurement
- Water source
- Availability of manure
- Availability of top soil
- Shelter and its direction
- Tools to be used
- The purpose of the nursery
- Sort of nursery –trees, vegetables, fruit?
- Number of plants
- Size of land available
- Variety of seeds – do you want to introduce a new variety or not?

The site should be gently sloping and well drained, do not put in swamps, or on clay soils.

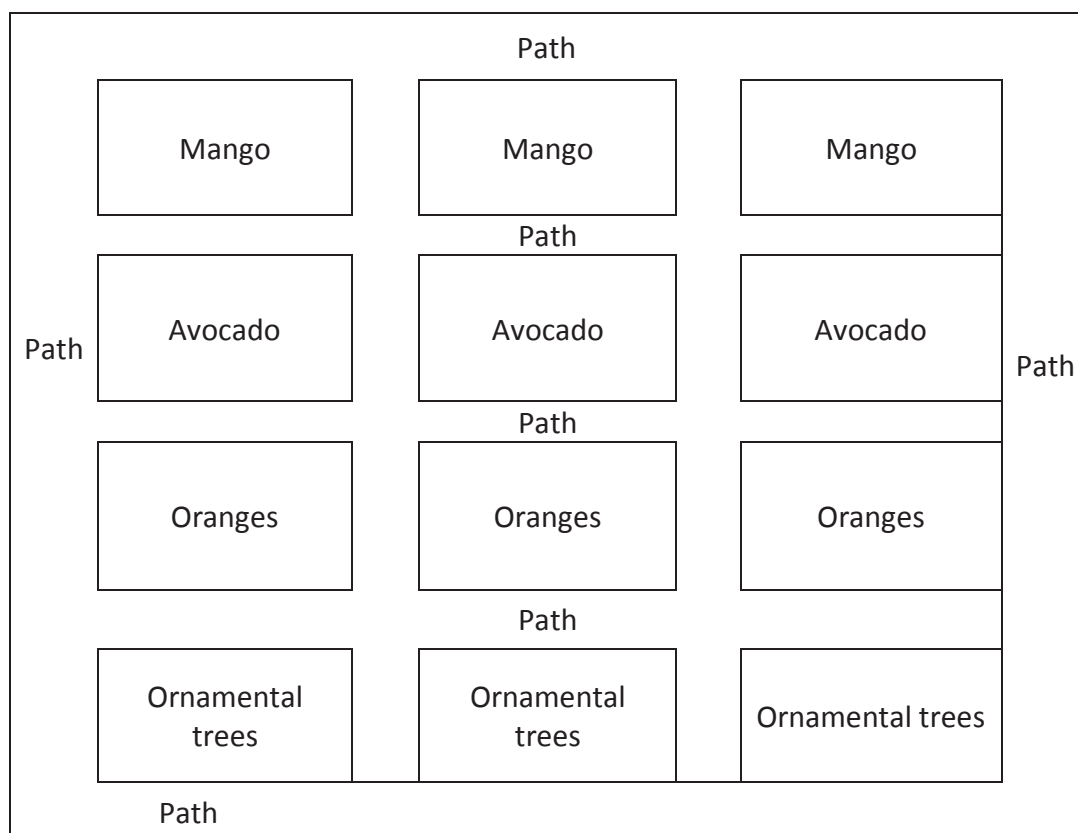
Calculate what you will need and work out a budget. Start small and let it grow. Do not enter into any business without budgeting. The only thing you will need to buy is seeds.

Pine trees take all the nutrients out of the soil and stops water going to the ground, so don't buy them. Plant trees which are multi-purpose; trees that are nitrogen

fixers, wind breakers, shades to crops, timber and firewood. Albizia is all this – plus when you eat it, it regrows, so is a very good plant for nurseries. Also, you need to buy polythene bags, or use tins, fibres, paper, bavera. You can use newspaper to wrap round the plant in a small tin, then take the tin out. You can then put the paper in the ground as a pot and it will decompose.

Preparing for your nursery bed

Firstly, clear the site and remove the stones and weeds. Design your bed...



The paths should be 2 or 3 feet, wide enough for a wheelbarrow to get between the beds, to maintain, weed, water and apply manure.

Preparing your seed bed

Before you plant your nursery bed however, you need a seed bed....

Prepare the soil with 50% top soil, 40% manure and 10% sand (sand which has small stones, very fine). The manure can be animal waste, compost, manure from pits, black soil from forest – but don't add charcoal. Mix these together to make a porous mixture which allows good penetration so that roots can penetrate and water can move. You can use ash or animal urine to deter termites, or salt.

Put the soil in to your seedbed. Then you must protect it – put protectors around it, eg stones, banana fibres. Some seeds need to be sown in lines, others can just be distributed. Some seeds are hard, and not easy to germinate, such as orange,

avocado, green paper. Not all seeds will germinate at the same time. After you have sown your seeds, you should water and then cover the seed bed with mulch. Choose fruit trees or bushes, not things like cabbage, papaya. With papaya, it is very hard to tell which are the male and which are the female seeds. Female are black, male are white or brown. Also, some males are black! If you put seeds in water, the male seeds will float up and the female will sink to the bottom. Always plant the female seeds. But say to your customers that they should give you feedback, and you will give them compensation for any seeds they have bought from you which have failed to germinate.

If you plant a black seed and it germinates as a male, leave it, and it will help with cross pollination.

It is easier to choose fruit trees! When you buy, buy at least two of each species so that cross pollination will occur.

Transplanting your seedlings to pots to put in the nursery bed

Mix together

- 60% top soil
- 20% sand
- 10% compost
- 10% clay

Leave this mixture for 2-4 weeks before use. Transplant your seedlings from the seedbeds into the pots when they are still young, not exceeding 3 weeks.



Keeping records

You **MUST** keep records – when did you plant, what did you plant, what is the germination period. Label the plants in each bed, which are which. This is **VERY IMPORTANT**.

Keep records in the nursery beds, and also in your books. If you sell some oranges (for example), count how many left – make sure you know, otherwise you will lose money.

You yourself are responsible for monitoring and evaluation. You can bring in an auditor to check your books and he can advise you on how to do your books, but it is entirely your responsibility to monitor and evaluate and keep records.

If you don't sell your plants, this means you didn't do a workplan properly.



Grafting and Budding

Claire Nsubuga Namuteri 0712 290966 0704 883865

Propagation is the process of raising fruit and vegetables through different methods, raising seeds, root cuttings, layering, grafting and budding.

You have to be proud you are a farmer! Take farming as a business.

Uganda produces many fruits – such as mangoes, oranges, pawpaw, passion fruits, pomegranates, guava, avocados, jack fruit.... Fruits that are good for health, eg pomegranates are becoming extinct so Uganda is losing its biodiversity. Is it natural to clear many diverse trees and instead plant just one tree? Ugandans have destroyed the country's natural diversity.

The best fruits to grow for business are mangoes, avocados, oranges and passion fruits. Always buy seeds or collect them locally, so you can be sure of what you are getting.

Mangoes

Use the fibre mango “guogwa”. These do well in Uganda. Collect your seeds in July/August. Cover the seeds with grass and water them. The water softens the seeds – you can then open them and out of it you will get 6-10 small seeds. Separate them out and plant them up separately.

Avocados

These can be collected all year round. Many species are indigenous. Make sure you collect local seeds.

Oranges

Collect the lemon seeds, and plant them as well

Passion fruit

Plant yellow or hard passion fruit.

Of all the other seeds which you could use, only pawpaws have to be carefully selected. The flowers of male pawpaws are medicine for chickens.

We live in harmony with nature. Nature can live without us, but we cannot live without nature. We spray eg a caterpillar – but also kill other things in the environment. It would be better to just get a stick and kill the caterpillar, and not kill everything else in the environment.

DO NOT USE CHEMICALS!!!!

Sometimes a caterpillar lays an egg on a mango flower, and the mango grows with the caterpillar inside – the egg changes to a pupa inside the mango as it grows. You must be careful with field hygiene. Collect all the mango seeds and bury them if

you're not going to use them. Near the flowering time, put grass around the tree and set fire to the grass. DO NOT use chemicals – remember weevils can withstand chemicals.

Remember – people spray what they are growing for selling, not the ones they are growing for their own consumption!!!

DO NOT SPRAY!!!! CHEMICALS ARE VERY BAD!!!!

Biodegradable chemicals eg paraffin, salt, dry cell, ash, urine – all these break down by the time we eat our food so there is no danger. But non biodegradable chemicals are very dangerous.

Planting seeds

You can either plant directly into the pot, water them, weed them, and manage them well.

Or you can plant indirectly – identify a place to make the seed nursery bed. (See page 35).

Pricking out is the transfer of small seedlings to potting bags ready for the nursery bed. Transplanting them is putting them into the garden.

The mangoes can stay in the nursery in the pots – they will become rootstock for you to use for grafting.

Management of rootstock

Grafting is the art of joining two compatible parts of the plant, known as the rootstock and the scion. The scion is the small branch or twig containing buds which is then grafted onto the rootstock. You cannot graft different species as they have different feeding habits. What you put on top is what you get – it's not cross breeding, it's propagation.

When seedlings are transferred into a pot they are called rootstock because you only need the root system, you don't need the branch. You should wait the following lengths of time for your rootstock to be mature enough to use

Mangoes – 5-8 months old

Avocado – 4-6 months old

Orange (lemon) – 8 months old

Passion fruit – 4-6 months old

During all this time you should continue to routinely water, weed, thin out, prune, and practise pest/disease control.

Budding is eg getting an orange scion, inserting each bud into the lemon rootstock.

Advantages of grafting and budding

- The plant attains maturity more quickly

- The plant is more resistant to soil borne diseases
- The plant attains quality produce
- Improves the yields of the plant. Normal seeds when they come to maturity - some just fail, some are not good fruits.

You must always select high quality scions.

Criteria for selecting your scion

You should ask questions when you buy your scions – does it drop many flowers, how do the fruits behave when they are formed (do they drop early, do they develop cracks etc), probe for different qualities. If you are happy, then buy a scion from that tree.

If plants don't grow well in your area but grow better in others, don't bother with these plants. Only try to grow the ones that grow well in your area. You won't sell the others.

Art of Grafting

You need

- Scions
- Razor blade/strong knife
- Polythene paper or grafting tape
- Root stock
- Chair/stool
- First aid (in case you cut yourself)
- Working clothes

Cut the scion at the same angle as the root stock

Cut the plastic bag into a rectangle, and cut it into thin strips – stretch these so they become very long



Keep the scions in water before grafting

Cut off the leaves of the scion before grafting



Place the scion against the root stock where you have cut off at an angle, and tie round with the strip of polythene bag.
After you have finished your grafting, cover over the plants with a plastic bag to protect them and put them in the shade



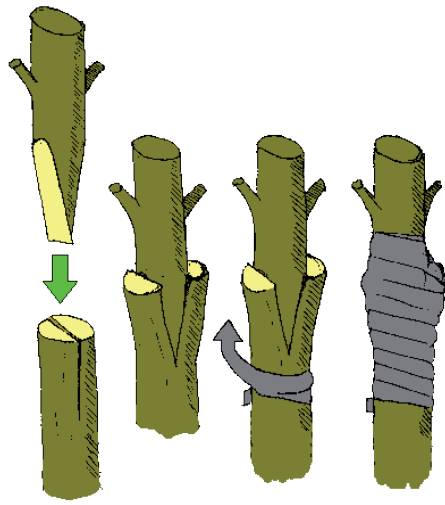
After you have grafted you should wait till you can see leaves coming out – take the bag off and then wait till the leaves are fully out and then plant them. Use a stick to support the seedlings.

You can graft onto volunteer crops.

Other methods of grafting

- Cleft
- Whip and tongue
- Budding

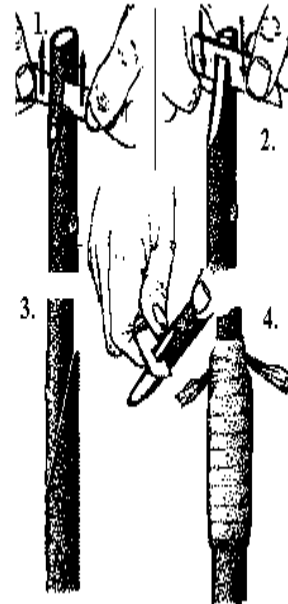
These are shown on the next page



CLEFT (OR TOP WEDGE) GRAFT

Cleft Grafting

9.96



Whip & tongue Grafting



Budding

Gender in Agricultural Development

Gender	man/woman
Agriculture	the farming of land to raise crops and animals
Development	whenever you do something to improve your livelihood either at community or national level
Sustainability	whenever you do something you have to think how it can be sustained for a long time and how our children will receive it. You have to think that you want your great-grand-children to see what you have done, not just think for yourself.

At Riverford, you then had to list a 24hr daily profile. You were divided into 3 groups – the women, the men under 50 and the men over 50.

Only the women gave a true account of how they fill a 24 hr period. The young people were dreaming – they don't bathe or cook, they loiter, they sit around. They were not honest in their account of their 24hr period. The women have a lot of work, the men just sit around, the older men too. The time they give to the garden is very little. This is VERY BAD.

We can look at our farming in terms of roles. Our roles are not the same men/women, and as we get older. We cannot expect elderly people to do as much on the farm as when they were young. The young men should be busy in the garden!!! We are to enhance our agricultural development by being aware of what is going on around us, we should be aware of the roles of other members of our family.

Everyone must share the tasks.

Communication Skills

Communication is the exchange and flow of information and/or ideas from one or more persons, organisations or another source, to another. We are able to see/hear/speak/send/receive. There is an exchange of information or ideas. One person to many, or many to one person, or one to one, or many to many. Vertical communication such as commands to my children, or horizontal communication such as sharing, which is speaking with not to someone.

When there is understanding, there is action.

Ways of communicating

Listening	Speaking	Singing
Management	Poetry	Story telling
Meetings	Workshops	Testing
Writing	Effective leadership	research

Reasons for/Functions of Communication

- to inform
- to provoke into action
- to entice, persuade
- to educate
- to entertain
- to indoctrinate
- to bring understanding and action

We may not communicate effectively because

- Age (hear poorly if elderly, or a baby)
- Language
- Attitude
- Culture
- Economic situation
- Competitions for attention

What can we do to improve communication skills?

The most effective housemistress is someone who knows

- Interest, love and discipline
- Time management
- Being able to know what's going on

Communication skills farmers can employ

- Language
- Knowing the background of your target audience
- Interest
- Proper time management
- Being aware of communication barriers of the audience eg know it all characters or people who are impatient, bad listeners etc

Non verbal communication

- Touching
- Clothing
- Social communication – open door, signs
- Environmental communication - healthy plants

Much of the non verbal communication is unconscious and may represent a major portion of our mental capacity. Non verbal communication supplements oral communication. When we communicate with other people, we normally use words which have a non-verbal context in meaning, eg “she walked towards that side”, pointing towards “that side”.

Non verbal communication can be classified as

- Environmental communication – the environment influences the communication that takes place within it. Objects in an environment often show the status and picture of these people who own these objects, eg an open door communicates that all is well, please come in.
- Social communication – working and living environment influences how we communicate and affects our social behaviour. Non verbal communication can send very important messages – eg walking into a home without hesitation conveys a message of power and authority
- Physical communication – people can use their bodies to communicate, eg facial expressions, gestures, eye movement, voices and touch can give a message of acceptance or regret. Proper use of physical expressions replace words and allows for effective communication. There is a need to understand what peers, subordinates and superiors are non verbally conveying before making organisational decisions.
-

Hearing vs listening. Hearing is picking up merely sound vibrations. Listening is making sense out of what we hear – listening requires paying attention, interpreting and remembering what we hear.

There are 5 senses – taste, smell, sight, touch, hearing. There is also a “sixth sense”, telepathy. We cannot do anything without information. You won’t know when to see, when to weed, how to grow eg bananas. It is very possible to communicate poorly, but you must learn to communicate well. Dogs and cows and other animals can communicate with us too, you must learn to listen to them and hear what they are telling us.

So, it is the same in farming. You must be able to see and hear the signs on your farm – how do I know my compost is ready? How do my plants tell me things? If they are yellowing, then they are saying that they are diseased or that they need water.

You can hear without listening. If you listen you have been communicated with. If you listen you think and reflect about it, you put into plan what you have thought and then you go back to action. Think – plan – act – get lessons/results. We must take action after we’ve thought and planned.

If plants are fertile in some soils and not others, then the soil is communicating with you. If they are communicating and you don't listen or take action, then it is as if there has been no communication. You will lose your money if you continue to put plants where they do not do well.

You cannot blame the government, or the donors, or your sponsors. You can only blame yourself. The development partners just assist, it is down to YOU. If there is no change in your home, it is YOUR fault.

Extreme poverty is classed by the IFAW as being less than \$1.25/day to live. 61% of sub Saharan Africa is at this level. But only YOU can change the situation.

Nobody else will change your bad situation; it is YOU yourself only who can facilitate the change.

Home Hygiene

This is the care given to a family so that they can live in a healthy, happy life in their home. A family is the group of people, of the same blood, who live together by marriage.

A nuclear family is the mother, father and children

An extended family is the mother, father and children, and close relatives

Roles of Fathers

- To have vision for the family
- To set goals and objectives
- To provide basic needs
- To provide security at home
- To guide and counsel
- To keep records
- To lead families to know God
- To decide the income generation
- To be responsible for family planning
- To care for the wife
- Parental love

Roles of mothers

- Parental love
- To implement home activities
- To report what has happened in the home
- To give birth to children
- To keep stores
- To nurse sick children
- To cook food
- To take the children for immunisation
- To care for the husband
- To serve visitors

Roles of children (anyone under 18)

- To obey their parents
- To help their parents and others
- To graze animals
- To go to school
- To sweep
- To worship
- To discover new areas
- To dig
- To collect firewood
- To clean utensils
- To obey discipline

What is a home?

It is the safest place we have to stay. In a home we must have

House	Latrine
Kitchen	Drying rack
Dust bin	Compost pit
Store	Compound
Drying line	Animals/poultry
Bathroom	Tiptap

A good house must have

Doors	Windows
Ventilators	Store
Be well built	granary

A latrine must have

Door	Tiptap
Chimney	Cover
T/P	Own broom

The drying line must be between the latrine and the main house

Methods of cooking foods

- Boiling
- Steaming
- Dry heat = frying, grilling, roasting

Stimulating (eg tea, coffee, cocoa etc)

Nourishing (eg milk, 1 cup of milk/day is sufficient)

Refreshing (eg juice, soda etc)

A tiptap



How to make: a Tip Tap

A tip tap makes washing hands easy and saves water.

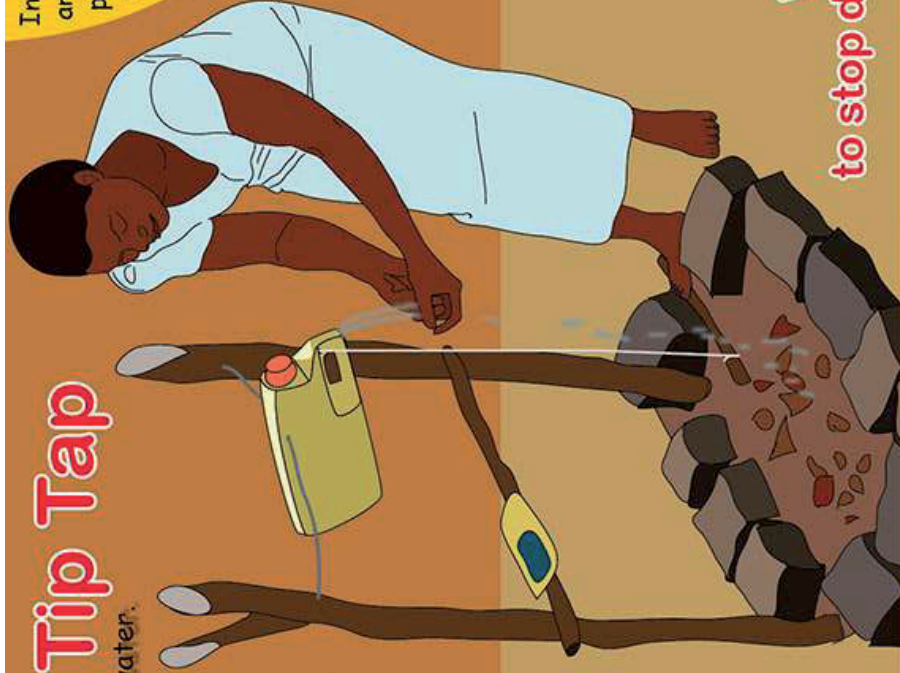
Materials

- Pegs
- 3-litre jerry can
- String and wire
- Soap
- Water

Saves Water

In some areas tip-taps are so popular that people are selling them for Sh 10,000!

Titus, Kyenjojo



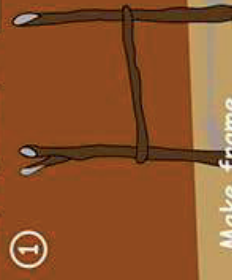
Better hygiene for you and your children

Wash hands with soap to stop diseases like diarrhoea

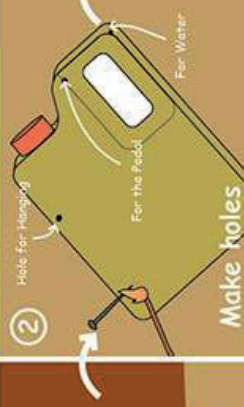
Use:

- By latrines
- Before cooking
- Before eating

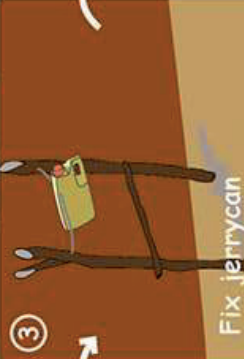
Step by Step



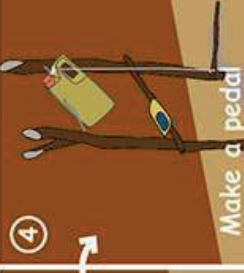
Make frame
Make the frame with pegs.



Make holes
Heat a nail or wire. Use it to make holes in the jerry can. Make holes for hanging, for the pedal and for water to come out.



Fix jerry can
Attach the jerry can to the frame with a wire.



Make a pedal

Add the pedal. Heat makes the jerry can pour when you step on it. Make a dish for soap. Then fill the jerry can with water.

Why is it called a Tip Tap?
When you Tip the jerry can it becomes a Tap!



Entrepreneurship - Maliam Taupe

What we have learned so far has shown us that we all depend on each other, and everything on the farm depends on everything else. You can't just have one thing independently.

Entrepreneurship - what does it mean?

You often see "X & X Enterprise" outside a shop or on commercial sites etc. It is something to do with business, its control and management.

Entrepreneurship is the act of thinking about innovation, and the activities that will do this. The entrepreneur is the person or group who will do this, and the enterprise is the output, the result of your thoughts and innovations.

An enterprise is associated with both businesses that are profit-making etc shops, industries, banks, co-operatives, and also non-profit making eg government institutions, hospitals, churches, charities, NGOs etc . A social enterprise is a non profit making organisation, a business enterprise is a profit making organisation.

An entrepreneur thinks about the immediate, the medium term and the long term results of his business. Before he starts he has to plan and study the market. Eg. to plant pine trees it will take many years before you are making a profit, but to open a shop will bring money in immediately. It depends on what you want to be innovative in.

Expectations of the students!

- Translate training into action
- Know the advantages of entrepreneurship
- Set up an enterprise
- Know the procedure for starting up an enterprise
- Be able to grow more maize
- Improve development
- Know the different ways of carrying out a business
- To have good business management skills
- To be exemplary
- To know how to make profit
- To identify/select an enterprise to get involved in
- To keep better records
- To identify fraud
- Know better the risks and uncertainties

"An enterprise is a project/innovation/undertaking specifically that is difficult or requires an input"

Business Enterprise

We are going to talk about farming as a business. What elements do we need to think about before we start a business?

Market
Enough capital
Location
Labour
Transport
Plan
Feasibility study
What type of business

Vision
Security
Communication
Management
Place/product/person/price/promotion
Raw materials
Machines

Not all businesses will need all these things –or will need them all at different times. So it is very important to decide what kind of business you are talking about.

All enterprises will need a vision. You need a vision so that you can see where you are going. Set it far out in front of you, and you will then know you have to do a number of things to achieve the vision – once it is achieved then you will set another vision. Work towards achieving the vision, with plans and activities. All this is done with record keeping. Draw out a vision and pin it on the wall. Eg if you have a grass thatched house, draw a tin sheet house and know that your vision is that you will have that in 5 years time. Then in another 5 years you will have some animals.

Farming as a business

Farming is part of us, but we just sell the little we have left over that we don't consume. Now we have to look at farming not as a tradition, but as a business. Sometimes this will be difficult because of the climate changes, but it will make money, and it will improve the soil of Uganda.

Different regions in Uganda grow different things. Some things fail to grow in some areas. So we need to consider:

Land	Storage	Market
Season	Materials	Tools
Water	Varieties	Labour
Transport		

You need to be aware of the key season for each product you are farming. You need to be conversant – so you need to do research. It will then be clearer which product will be more profitable for you.

There are plants which will grow without much labour, but the competition will be high because everyone wants to grow these! Think – if you decide to use your family labour, will you then have to keep your children from school? You will have to think about hired labour etc. Can you afford this? Or can just you and your wife manage to do all the work? You need to really think this through.

The material you have access to will determine which business you go into.

Think too about the seed variety – don't use one that takes 2 years to grow! Make sure you use seeds that are drought resistant, pest resistant and quick maturing.

The market is the most important consideration. You need a steady market, not a fluctuating one. You need easy access, locally available, weekly market near your home. Grow things that you have an optional market for, rather than something which you cannot sell at home or in the local market. Don't think about taking your products to Kampala yet, just concentrate on selling them locally.

Think about the risks - eg transporting eggs to market?! Breakages will cut down your expected profit. You may have to trade the risk of broken eggs for slightly less money, so sell a tray from your home directly for 4500, instead of at market for 5000. Plus this will save you time.

Study the market. Talk to others who are doing the same things, learn from them, ask questions, find out the problems, research, research, research!

You can minimise the risks for each product in many different ways, but you will need to have researched so that you are aware of the risks. Remember – the higher the profit, the higher the risk. The lesser the profit, the lesser the risk.

Factors for success

You must advertise, even something as every day and common as tomatoes. Otherwise how will people know you have them to sell.

- Put a sign on the road
- Take them to church
- Give a discount
- Say they are chemical free
- Display them on the side of the road. Display is so very important. If the mat is dirty, if you are dirty, if the tomatoes are dirty, people will not buy from people who are not clean.
- Get your friends to support you. They will let you supply them, and then ask your friends to tell others about your produce.
- You should and you must advertise. If farming is a tradition, you do not advertise, but if farming is your business, then you **MUST** advertise.
- Market – know which eg tomato your locality prefers. The soft ones have a greater risk because they will go off more quickly, but everyone is selling hard ones because they last longer – but the risk is lower. Which has the greater profit?
- Cleanliness – everything needs to be clean
- Language – your advertising language needs to be persuasive
- Packaging – when you sell your eg tomato, everyone else is also selling the same thing, so how are you going to make people buy yours? Your containers must be clean, or put 5 in a nice cavera, tied neatly, and sell in a supermarket. Gnuts are 200 for 10 spoonfuls, but if you put them in a nice bag and package them nicely, you can sell them for 500 or 600 in a

supermarket. Other people won't think of this – you have to keep thinking of these things.

- Another example: honey is 10,000 per litre in West Nile. Buy it in a bottle, and package it in nice jars, and wrap them nicely, sell 6 jars to the supermarket each at 5000, so you will make 30,000. Your production costs around 5,000, so added to the purchase price of 10,000 makes a total cost of 15,000. So you will make 15,000.
- Preservation methods. You have to preserve your produce because you can't send all the produce at once. How will you store it to keep it in good condition? Put some timber shelves up in your store room and put your stock on there. Put ash on the floor, if not cement – this will keep insects away from your produce. Always sort the bad ones from the good ones. One ripe tomato will make all the others ripe.
- Pricing. Your prices have to be according to the market price. You have to take into account the cost of production, the quality, the availability. The best quality sell for more, so keep your products clean and of high quality. You can determine this by the variety you choose for your plantation. Availability – if a product is sold off season, the price will be high. If it is very common, the price will be low. Maybe you wish to reduce your price a bit compared with others to attract customers – remember there is also a minimum price below which the other marketeers will chase you out of the market, eg fuel market. A litre is 3700 – 4000. Nobody is selling for 3000.

Stages of growth of the business

Conception	the idea of the business
Infancy	you develop the vision, set objectives to help you achieve the vision, set out a business plan to help guide the process, start keeping records
Adolescent	set the ball going, you start to make progress, you keep on with your record-keeping, you start to bring in profits
Mature	the business is grown. Your records will show whether you are successful or not
Elderly	your business is old. You need to see if you are making profits – if you are, keep doing the same thing; if you are not, then move on
Death	close of the business

Don't wait for your business to get old before you realise it is not making a profit. You must keep records so that you can tell if you have made profits so that you know whether to continue with the business or not. If you have not made profits, then it is time to move on, either to branch out or start again with something new.

You must always keep both kinds of records, narrative or financial.

Speak to the Agricultural Officer at the local council – ask for information and advice. Ask about the technicalities of growing certain crops. Speak to other NGOs, or other people in your community. Read the newspapers and read books. New innovations come up every day. Keep struggling to know more.

Report Writing

Maliyam Taupe

What is a report?

- Writing about your expenditure
- Reporting on something which has been done
- Feedback
- The writing of an assignment
- The feedback of an activity
- An accountability of activity done
- A record of what has occurred
- A document showing success, failures, future prospects
- A document to hand to someone who is expecting feedback

It is part of our duties, our role, our responsibility. It helps to track our progress. We look at our failures and see where we can improve. We also need to include the challenges and constraints to the project. But don't include unnecessary stories!

You can produce different reports on the same activity depending on the person the report is going to, and what they're interested in.

Why do we write a report

- To remember what happened in the past
- To know our expenditure
- To know our needs
- To solve any matters which are arising
- To show why some things were done previously
- To build trust
- To help in future planning
- As a reminder
- As direction for evaluation
- To show transparency
- To give clear understanding
- To show openness
- To give accountability
- To give evidence

We have to have both financial reports and written reports. You can't have one without the other.

Finance report

When you are doing a financial report – you can't have the spend the exact same amount as the income! If you over spend, you need to show the reasons why, if you under spend, you need to show the reasons. If you are under spending, then you are obviously showing that you are keen to look after resources and understand that you have to be careful with money. And this will be appreciated by the donor. If you are

overspending, you have to have clear reasons why, so that the donor will know, and may be able to send more. If your expenditure is exactly the same as your income, the donor will know that you are not being truthful, and have just made the report fit!

Written report eg minutes

Whenever you have any meeting, you must take very specific minutes. This is for evidence if in the future anyone asks what took place, or what decisions were made. The minutes give reasons why things were done, especially if the things were outside the norm.

It also builds trust – for example, you need attendance records as evidence that something happened, eg our attendance lists at each training session.

Minutes help with future planning. How did we overcome our challenges? What were they and what did we do?

Evaluations are always based on reports. The reports are a summary of achievements and also failures. It also helps to follow up the trend to check if it is meeting its objectives. Is it moving as planned, if not what needs to be done?

If you are going to a new area, the LC will want to know about you, and your minutes will be able to give him insight into how you operate.

Why do farmers write reports?

- Accountability and transparency
- A record
- A point of reference
- To compile data
- It is a way to access funds and resources

A viable report should be precise and not wordy, and written timely.

Who do we write reports for?

- People with whom we work
- Someone who has given you an assignment
- The government **
- Donors/ funders **
- Bosses at the workplace
- Members **
- Children/parents
- Lecturers
- Church leaders **
- Yourself

** the most important ones

Reports help YOU track the progress of what YOU are doing. You should consider yourself the first recipient of your report before you send it to others. You write reports for people you are working with - it could be your peers, as well as your supervisors, or even people below you.

You have to submit monthly/quarterly reports to government departments on your activities. If you go there yourself every time, they will get interested in you - make the most of this interest. You also have to register with the community department – don't send a boda boda with the report, go yourself. Let them see you. The benefits are long term.

You must write your report based on records that you have kept, not things that you remember (maybe wrongly) and have lost the attendance lists. Keep records of what you do on a daily basis. If you have a recommendation, capture it immediately – then it is very easy to write a monthly report. And from that the quarterly report. You will only find it difficult to write a report if you haven't kept records.

You must be clear, based on facts, show accountability.

Types of reports

There are two main types of reports – financial and narrative.

The financial report is ethical – it shows accountability of all your actions. If you have spent money you have to account for it. If you've done an activity you also have to account for it.

If you have used money for something other than what you were supposed to use it on, then you must account for this, and show the reason why.

It is good practice to be accountable to your family. You should be accountable at every level. We even have to be accountable to God. Be transparent, get all your family involved.

When you are doing a finance report, always write reasons for over expenditure. You need to set up a template for report writing.

Components of a good report

- Date
- Title (reason for writing)
- Author (for identification and clarification)
- Who you're reporting to
- Table of contents (for a big report)
- Background, introduction. This will be a summary of the activities the report is capturing, and the objective of the activity, what it set out to achieve. Written as if to someone who is reading it for the first time.
- Official stamp/headed paper
- Signature – if you email, the email is proof. If a hard copy, it must be signed
- Should indicate the challenges and achievements

- Attendance list if appropriate
- Facts
- The way forward/recommendations – only you can recommend a solution to the challenges you faced
- Set priorities
- List the lessons learned
- Conclusion

Write it in good hand writing!

A written report layout

Letterhead or stamp

Report from:

For the period:

Author::

Date:

1. Background
2. Objectives
3. Activities carried out to achieve the objectives
4. Achievements
5. Challenges
6. Lessons learned
7. Recommendations & way forward
8. Conclusion

Be creative – add pictures, bullet points and paragraphs. Find ways of making the report look really attractive so that people want to read it.

This will then need a financial report to go with it.

You should submit a quarterly report no later than a week after the quarter ends.

Financial Report

When money comes in, it will always come with a budget, eg

Transport	100,000
Allowance	50,000
Stationery	150,000
Accommodation	200,000

A financial report layout

Item	Total in	Spend	Date	Comment	Total spend	Balance
Transport	100,000	20,000	8/7/12	Iganga – Mukono to fro	30,000	70,000
		10,000	15/7/12	Iganga to Jinja to fro		
Allowance	50,000	3 x 10,000	8/7/12	Only 3 came, 10,000 each	30,000	20,000
Stationery	150,000	50,000	10/7/12	Receipt required	50,000	100,000
Accommodation	200,000	No spend				200,000
Totals	500,000				110,000	390,000

Each of these items may have a separate page so that you can list all the expenditures under each item. You will then be able to transfer the balance at the end of the period to the final table.

All receipts must be pinned to the back of the financial report. If you do not have a receipt, you must sign a payment voucher to account for the money going out. You must not forge signatures – this is an offence. Therefore, although for example, you had 50,000 as allowance for 5 people – if only 3 people came, then you only record 30,000 as being a spend. You do not forge signatures for 2 more people!

What do you do if you have money left in the bank at the end of a quarter? You must always send a bank statement to accompany your financial report, to prove how much money you have left in the bank, or that you have spent it all. The donor will then send you the difference between the balance and what they were going to send.

It is vital that you send a bank statement with your financial reports.

If you had overspent, for example the stationery had cost 300,000, then you could use the balance from the accommodation money which had not been used, but there must be an explanation of the over and under expenditure.

“Miscellaneous” – this is not just for your own spending on extra. It is for expenditure which does not fit into the categories which may appear on your financial sheet. You must be able to know exactly what you have spent and on what, and be able to explain it in your report.

An auditor may invite a treasurer from another church to check through your accounts and see if there are any loopholes, if any money has not been accounted for. Auditing is not done to criticise, it is done objectively to help the organisation ensure it keeps good records.

Training Skills

Edreda Bampata

Training = getting more knowledge about something.

When you train you

- Add knowledge
- Teach skills
- Increase competence
- Must be an example to others
- Must learn yourself at the same time

Directive Method

- S Spot an opportunity. Identify the opportunities for others, eg training at the district
- T Tailor what you teach. It must be relevant – do it in the style which will help that particular group. Maybe they learn better by drama, or demonstrations rather than lectures. What suits you may not suit others
- E Explain
- E Encourage – you don't often use this word in Uganda! You must encourage when the students are not so good
- R Review. If something is done not quite right, you need to review it and get them to rectify it.

More Modern Method

- G Goal. What do you want to achieve? Find out where the group is in their learning, and where you are, and start from there.
- R Reality. What is in your hands? **
- O Options. What do you do next?
- W Will. What do you want to do now?

** It's not what is outside that will bring help to you, it is what is in your hands now. Like if you go on a retreat to find God – but God is in your hearts. God has already given us what we need for our lives and also for the life to come. We just need to use it. Whatever God has given to you in your hands, it is not small, it is enough. You have all you need in your hands, the key is hard work. Your riches are all in your hands.

Integrated Pest Management

Claire Nsubuga

A pest is any living organism that destroys our crops, including human beings!
Management is caring for the crops. Pests cause the diseases which kill our crops.

Some pests are worse in some areas than others because the soil is different and different crops do well. Host resistance – the host plants may be preferred in some areas to the ones you are trying to grow, so the pests prefer them.

Remember, it is possible to bring diseases into farms by not being clean. Visitors can bring disease on their shoes. Ask your visitors to walk through water when they come onto your farm.

Ways of controlling pests

- Intercropping
- Use of ash
- Use of dung
- Maintaining fields in a hygienic way
- Crop rotation
- Selection of seeds
- Mulching
- Timely planting – prepare the fields before the rain comes.

Definitions of IPM (Integrated Pest Management)

- IPM is a system making deliberate use of all available means to keep the pest problem under the level where they cause economic damage resulting in pesticide application as a last resort
- An ecologically based pest management system that promotes the health of crops and animals, and makes full use of natural and cultural control processes and methods including host resistance and biological control only using chemical pesticides where and when the above measures fail to keep the pests below the damaging level
- A mixed strategy of selective use of agro chemicals, biological predator/prey methods of genetic resistance and appropriate management practices

By “selective use of agro chemicals” we mean that, besides natural ones, you can use those which are biodegradable so that when you use them you will be able to keep the crops safe from pests. If you use these chemicals, then make sure you dispose of the container properly. If you have a certificate in organic farming you will lose it if you don't dispose of the container properly. Good natural pesticides are crushed garlic cloves, crushed pawpaw. You can feed crushed pawpaw to pigs, they deworm the pigs and also humans. Also moringa seeds have the same effect. 1 spoon for pigs, more for cows.

Weeds are a pest because they compete for the nutrition of the soil.

A pest is an organism, be it an insect or micro-organism or plant occurring in a crop and causing an economic injury.

What should we consider when we think about IPM

We don't just spray when we see a caterpillar do we, so what are the requirements when we are thinking about IPM:

- Knowledge of the ecological conditions related to the pest in the area. Some pests are not in some areas.
- The species of pests and beneficial insects existing on the cultivated land and the neighbouring countryside. Even if you don't know their names you know they are there and what damage they do.
- Know the methods of pest propagation and how it spreads
- Know the modality of the injury and what level of injury the pest causes. Eg when the plant bitterberries are at the seedling stage – by the next day, if you have not applied IPM methods, you will find the seedling is just chopped, or cut off, as though it has been cut deliberately. This is probably a cutworm, they need to be killed!

Weeding is one solution to eg rats

Ant hill. Use salt. Dig a small ditch on top of the anthill, put 4 or 5 kg salt on top of the anthill and keep watering. It soaks down and it is effective. But sometimes the anthill may not be on your land – and people want the flying ants.

Don't wait for cutworms to come to eat your bitterberries - get a water bottle, cut the top off, divide into three, open up one side, and protect your seedlings with them.

Beneficial insects

- Wasps (they eat caterpillars)
- Bees
- Spider butterfly

Biodegradable chemicals

- Nimu cake from Kenya
- Potash
- Strida

Hints

- Monitoring your plants must be part of your daily routine.
- Ash gets rid of aphids.
- You can just put your banana weevils in a container and cover them – this will suffocate them
- Tephrosia planted around the boundaries of your fields can deter pests. Note that they use this chemical to catch fish, so when you eat fish you are eating this chemical

- You can use milk (1litre of milk to 15 litres of water), or neem extract, or hot chilli, to control tomato blight
- Coffee leaves stick together because of a caterpillar – make sure you separate them individually and kill each caterpillar as you find it otherwise it will multiply
- Aloe vera can be chopped and given to chickens.
- The white sap inside aloe vera can be boiled in water and drunk
- Moringa seeds can help with de-worming, or you can eat them as vegetables. You can crush them and put them into water for your chickens
- The leaves of moringa provide extra vitamins for pregnant mothers and animals, they add sweetness instead of sugar. Also it adds goodness to the soil, and reduces nematode infection in bananas
- Do not use tobacco to spray – it is not biodegradable
- If your plant leaves are burned, this is often a fungal disease, not viral
- Pawpaw leaves can be given to chickens
- Comfrey leaves – chop and leave in a container. After some time, cut a tap in the bottom of the container, you will get concentrated juice which is a very good fertiliser
- Phytolacca is poisonous but you can use it in pesticides
- You can control pests by following organic farming methods.
 - Have you spaced your plants correctly?
 - Have you put enough manure on your plants?
 - Have you given them enough water?

Plants known for pesticidal properties

Biorationals is a terminology used to describe derivatives or mixtures of substances derived from natural substances, like plant extracts, wood ash, cow urine, mixed to make a mixture of solution that is used in crop protection against pest attack.

Similarly botanical pesticides is a terminology commonly used to refer to solutions that are derived from natural plant extracts and are used against crop pests as pesticides. These terminologies are used interchangeably depending on the author and what is being described.

Utilisation of natural pesticides to manage pests is an important option in SOA practice. Their importance is elevated by a need to avoid chemical pesticides as much as possible due to the many detriments associated with chemical pesticides.

- It is common knowledge now that most chemical pesticides do not only kill the pests but also a lot of useful organisms in the field. Special attention is put on the natural enemies that assist in maintaining low pest population or at levels below economic injury levels. These maintain nature in balance. But when chemicals are used, they disrupt this balance causing an upsurge of pests due to elimination of natural enemies.
- Chemical pesticides also affect human health. Chemical pesticides affect human health by having their residues sometimes accumulating in the human body causing disease and suffering at a certain stage.
- Chemicals can cause death if consumed at a certain dose.

- Besides the direct consequences of chemical use, they are also expensive for many smallholder farmers, which increase their cost of production thus reducing the profit margin.

Many plants have been recognised to have insecticidal properties and their extracts have been used for ages in agricultural production especially among small holder growers.

Some plant strengtheners

- Mexican and French Marigold
- Nettle tea (kibuga)
- Other plant teas such as leucaena and tithornia (kimyula)

Some pest repellents

- Mexican marigold
- Hot pepper (pilipili)
- Ordinary wood ash
- Onions and garlic
- Barsoap

Some pest killers

- Pyrethrum
- Neem tree seed oil
- Tobacco
- Lantana camara
- Cow urine and dung

Some pesticide treatments

Onion

Parts used	Bulbs and leaves
Application	Recipes vary from 10-100g onion peeled or leaves, per litre of water
Action	Mildly fungicidal, insecticidal, repellent
Targets	aphids, cabbage butterfly, diamond back moth, mites, scales, thrips, whiteflies, damping off, late blight. Onions can also be planted as an intercrop and act as a repellent to insect pests eg

Garlic

Parts used	Bulbs
Application	Different strengths are required for different pests. A common spray is to use 1 garlic bulb in 1 litre of water, mixed with a mild soap solution and sprayed immediately. The bulb can also be dried and crushed and used as dust. The dust can be made into a spray.
Actions	Insecticidal and repellent
Targets	Most insects.
Warning	Garlic has insecticidal properties that would kill most insects including natural enemies, so use carefully. The taste/smell stay long for a

period like a month so you may avoid using on crops that will be harvested soon.

Chilli

Parts used	Ripe pods and seeds
Application	Grind two handfuls of chillies, soak in one litre of water for a day, shake well for a few minutes, filter and add 5 litres of water and a mild soap solution. Can also be used as a chilli powder and is applied around the base of plants to repel ants, cutworms, slugs and snails.
Actions	Insecticidal, repellent
Warning	Avoid contact with skin and eyes

Tomato

Parts used	Leaves mostly, but fruits can also be used
Application	Simmer 1kg of chopped leaves in two litres of water, leave for 5 hours, filter, add a little soap, spray every two days when you see target insects flying in the garden. Tomatoes intercropped also act as a repellent to insects.
Action	Insecticidal, repellent, anti feedant, prevents egg laying eg. in diamond back moth, fungicidal

Neem

Parts used	Seeds
Application	Recipes vary from aqueous extracts, neem oil and kernel powder For aqueous extracts, 25-50gm/litre has proved effective against vegetable pests such as cabbage caterpillars, beetles and grasshoppers. For neem oil, it is used in seed treatment for example against storage pests like bruchids. Each kg of beans should be mixed with 2-3ml of neem oil. To remove bitter taste of oil from beans before eating, they should be covered with hot water for a few minutes and drained after. For kernel powder, 1% powder is mixed with grin, protects them against weevil attack during storage and does not affect viability.
Action	Insecticidal, repellent, mildly fungicidal
Targets	Effective against numerous pests, over 100 species of insects, mites and nematodes
Warning	The effective substances of neem lose their potency in sunny conditions. They are broken down by ultra violet radiation. It is therefore best to apply neem preparations in the evening.

Wood Ash

Ash is a common ingredient used while making biorationals. Ash in itself has repellent properties to insects. Apply wood ash directly around stems of young seedlings and after transplanting seedlings. The ash discourages cutworms from burrowing in the soil around the seedling. To increase effectiveness of ash, add a little amount of kerosene before application.

Benefits of using natural pesticides

Generally, natural pesticides have short term effectiveness, not like that of synthetic pesticides. But in the long run it is obvious that they have the following advantages over chemical pesticides:

- There is limited likelihood for the pests to develop resistance to the treatment as they do with synthetic pesticides
- They have less destructive effects on the natural enemies of pests
- They are less harmful/toxic to the health of either human or farm animals
- They have far less polluting effects to the environment or to water supplies

Mushroom Growing

Lydia Jjemba 0782 496722

Remember, the first market in mushroom growing is your home – you must taste what you sell! Mushrooms are good to eat, and will bring in money. Your neighbours will grow from you.

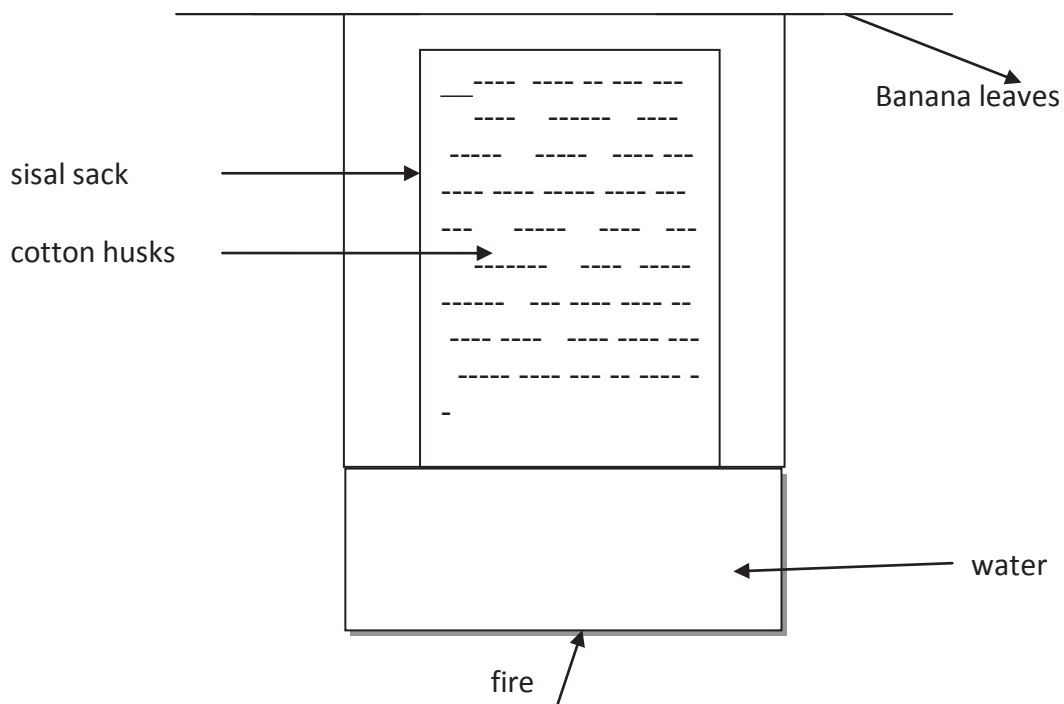
Requirements

- Cotton husks
- Mushroom spores
- Maize bran
- Water
- Drum (eppippa)
- Sisal sack
- Polythene bags

You need to construct a safe house where you will keep the mushrooms. Or wrap the sisal sack/tarpaulin over the mushrooms.

How to grow mushrooms

- Soak the cotton husks in cold water for 12 hours
- Squeeze the husks
- Line a container with sticks, and put the husks in the sack on top, cover.
- Boil the husks until steam comes out of the top, and cooks the banana leaves





- Squeeze tightly to ensure all the water is out, otherwise the mushrooms will go mouldy
- Take the cotton husks out of the sisal sack and leave them on the tarpaulin to cool
- Line a basin with a polythene bag, and layer the cotton with mushroom spores, or mix them on a table and fill the bag with the mixture. Add the bran, and mix well



- Do not put the mushroom spores in the cotton when it is still hot.



- Get all the air out of the bags and tie them. Put the polythene bags on a table. Check them every day for cockroaches, snakes etc which are attracted by the smell. Put tobacco leaves around the table to protect them.
- After 3 weeks put them into the house you have constructed –hang them as the picture shows. The roof of the house should be papyrus reeds or grasses



- After 3 days they can be harvested, and can be harvested time after time for up to 4 months. Cut a circular hole in the kavera get the mushroom out. Rub over to cover the hole when you have your mushrooms, and leave intact. More mushrooms will grow, for up to 4 months.

Herbal Soap

Using herbal soap reduces skin diseases. It is also good to sell.

You can use the following herbs:

Akanzironziro (bark

Omwoloola (bark/leaves)

Ekyewamala (leaves)

Kamunye (leaves)

Mankulaata (leaves)

Akasaana (leaves)

Ekikokooma (leaves)

Moringa (leaves/bark)

Musolini (leaves)

Enkami (leaves)

3 bars soap to 6 cups water.

After you have collected your herbs, pound them with a pestle & mortar. Mix with water. After some time, filter the herbs out and keep the water.

Smear the insides of your containers lightly with cooking oil.

Buy laundry soap (Star Soap, the brown one not the blue one). Cut the soap into small pieces or grate it and then mix it with the water from the herb, cook and stir until all the pieces are dissolved, and it becomes thick. Pour the water through a sieve to filter the herbs out.



Then pour into containers and leave to set for approximately 2-3 hours.



When they are cool, wrap them in polythene to protect them. If you wish to soften the soap, you can use 1 tsp of Equisula Salt in the mixture.

You can sell a bar of soap for 6000/-, or a piece of soap made in a cup will sell for 2000/-.

Herbal Jelly

Buy the jelly from a shop in Kampala. You can look on the internet for one which provides good jelly.

All the herbs which can be used to make soap can also be used to make jelly.

Boil the jelly slowly, add the water from the herbs but wait until you finish cooking before you add any perfume. Pour into containers, and leave for 1hr, and then put the lids on.

This will be good for skin rash, pimples, ringworm.

Don't put perfume into soap, it will detract from the beneficial effects of the herbs.



**APPENDIX 1
BEEHIVE CONSTRUCTION**

