

## Roof Water Harvesting

George and Rose were lucky to have a house with a corrugated iron sheet roof. This is ideal for harvesting rain water. However, the gutters were only on the front side of the house and they were broken. Also, the water container was not big enough to collect all the rain water for use on the shamba and for the cows. The Shamba Shape Up crew helped to put up gutters around the whole house and add a down pipe to take water to the tank. A base to rest the tank on was constructed and a 1,000 litre tank to hold the water was provided.



## Solar Light

George and Rose use a kerosene lantern to light up the house at night and for use while moving around the shamba. They spend about 120 kshs per week (500 kshs per month) on buying kerosene. D.light designs came to advise them about solar lanterns that they could use to replace their kerosene lanterns.

The d.light S250 model was recommended as a good alternative to kerosene

- It is up to 10 times brighter than a kerosene lantern
- You can charge mobile phones from it
- It uses energy from the sun so it is free
- It is safe (there are no fumes or fire risks)
- It is clean
- It is easy to use
- It has 4 brightness levels.



### d.light S250

To find your nearest stockist, SMS your name and address with the word 'DLIGHT' to 5606.



## Shamba Shape Up Series 1: Episode 7

George and Rose Waiyaki's Farm – Muthiga, Kikuyu

This leaflet contains information on zero grazing for cows (pen, food and health), small fertiliser packets, making compost, guttering and solar lanterns.

## Zero Grazing Cows: Cow Pen

A good cow pen should have 3 areas: 1) A resting and sleeping area 2) A walking area 3) A feeding and drinking area

### Sleeping area

Each cow/calf needs a separate place to sleep. The width of each sleeping place should be 120cm (4ft) with a length of 210cm (7ft). The floor should be made higher, about 25cm off the ground. If the cubicles are too big, cows turn around more and make it dirty which spreads diseases. A roof needs to be put above the sleeping area to protect cows from the rain, sun and wind.



New cattle pen

George and Rose's roof needed mending as it was leaking. The roof should slope towards the walking area and when it rains a trench should take the water and slurry away from the pen.



Concrete floors being made

A new milking place was added to George and Rose's cow pen. It was made with a concrete floor. This would make milking easier and also make sure the milk was clean. The calf pen should be built next to the pen where the mother cow is milked. When you are milking the cow it thinks the milk is for the calf and gives more milk as a result.

### Walking area

This should be made with concrete. The floor should slope towards the end of the pen so that manure and slurry can easily be washed away. A manure pit should be made 3 - 5 metres away from the pen to keep the pen free of disease. The floor should be cleaned often.



Supplementary feeding for cows

### Feeding and drinking area

There should be 1) a trough for mineral supplements 2) a trough for feed and 3) a trough for water. These troughs can be made out of wood, stones, or concrete. The feed trough should be long enough such that each cow has about 90cm length for feeding. The water trough should be built between the cow and young stock sections. The water trough can be built using concrete or a water drum can be used.



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## Zero Grazing Cows: Fodder

To increase the fodder from the farm George and Rose were advised to space their Napier grass properly, make sure they weeded often, used fertilisers and harvested correctly.

### Spacing

- Dig holes 15-20cm deep. Leave a space of 50cm between the holes
- In each hole apply one or two handfuls of farmyard manure, add 5grams of DAP fertiliser and mix thoroughly
- Place a 3-node cane in the hole. 2 nodes should be in the hole, 1 node above the ground
- If using root splits, cut off most of the green leaves from the top, trim the roots, place in the hole and cover. (Root splits grow faster than canes but there is more work to trim them).



### Weeding

- Weeding should be done after you harvest
- Apply farmyard manure after every 4-6 harvests. The rate of manure recommended is 2-4 tons per acre.

### Harvesting

- When harvesting, leave a stump 5-10cm in length. This will result in the Napier growing again faster and stronger
- When feeding to cows, cut the harvested Napier grass into small pieces. This helps cows digest it easily. Use a chaff cutter if you can.



## Fertilisers for small scale farmers

George and Rose were advised that correct spacing, use of fertiliser and use of compost/manure would help their vegetable crops grow stronger. Both fertiliser and manure/compost should be used.

### Choosing fertiliser

When buying fertiliser look for the right nutrients in the fertiliser. You need to make sure you are buying the right fertiliser for your crop and soil type.

### Size of packet

Small scale farmers do not need to buy large packets of fertilisers. You only need to buy the amount you need at that time. If you open a packet it does not stay fresh. Buying re packaged fertiliser is not recommended as farmers cannot be sure of what is in them or how old it is.

### Mavuno Small Pack Fertiliser

Athi River Mining (ARM) packs fertilisers in 1kg packs. The pack has following information:

- Date of packing
- Expiry date
- Nutrient in fertilizer
- Type of crop fertilizer good for
- How and when to apply

One kilo of **Mavuno** fertiliser costs 70 kshs which is fairly priced. Fertilisers cost money but they ensure you get a good yield!

### Advantages of small packs

- Easy to handle because of strong pack
- Allows easy product identification
- Better product protection
- Easy to store
- Suitable for small plots



## Zero Grazing Cows: Mastitis

Mastitis is a disease that affects the cow's udder and leads to less milk being produced as well as bad milk which has to be thrown away.

### Signs of Mastitis

- Reduced milk production
- Watery milk
- Milk with clots in it which are usually discoloured
- Milk that is stained with blood
- Affected udder is swollen, tense and painful
- The udder is more red and the animal refuses to eat
- Milk from mastitis teats should **not be used**.

### Prevention

- It is best if the floor of the milking shed can be concrete for easier cleaning and disinfecting
- Animals should be housed in clean pens, especially the sleeping area, which should be roofed, and kept dry.

### Treatment

- The cow's udder and teats should be disinfected with **Mastrite** from Cooper. Put 2 tops (20ml) in about 5litres of warm water. Wash the udder and teats and dry with a clean towel. Sprinkle the unused mixture on the floor to control the bacteria.

### When milking

- Wash your hands well
- Apply a milking jelly such as **Cooper Milking Salve** prior to milking
- Test for mastitis. This is usually done using a strip cup. However, you can use a black surface or even your hands to detect for the signs of mastitis
- The best way to milk is to apply pressure from the base of the teat downwards rather than pulling it down
- Milk until the udder is empty
- After milking, all the teats and the base of the udder should be dipped into a teat dip solution, which is a disinfectant.

For more information, contact Cooper K-Brands Ltd or SMS the word 'ANIMAL HEALTH' to 5606.



Checking milk is healthy



Mastrite disinfectant from Cooper



Strip cup testing



Teat Dip Solution

## Making Compost

Compost is very good for crops and costs nothing to make! You can use waste from plants, the kitchen and also manure from the cow dung to make it. An expert from IFDC showed Rose and George how to make a compost heap.

### How to make

1. Dig a pit in a shady place on your shamba
2. Dig 30cm deep, 1.5metres wide and about 2-3 metres long
3. Put a layer of dried plant material at the bottom of the pit
4. Add a layer of wet green leaves
5. Cover with cow dung and ash from the jiko
6. Cover with soil and sprinkle with water
7. Add more layers like this (dried plants, green leaves, cow dung, ash, soil)
8. Continue until the heap rises to about 60cms (2 feet)
9. The last layer of soil is about 10cm thick
10. Finally cover with grass or leaf layer to prevent loss of moisture
11. To test progress, put a stick into the compost. If the stick is hot and damp, progress is good
12. The heap should be watered every third day. If it is raining there is no need to water
13. The pile should be turned after three weeks and again after another 3 weeks (putting the bottom layer on the top). This helps it decompose quicker
14. It will be ready to use in about 6 weeks time!

### Benefits of compost

- It supplies nutrients to help plants grow such as nitrogen which is very low in most soils
- It supplies other plant nutrients such as phosphorus, potassium, calcium, and sulfur
- It improves soil structure helping it to retain water and nutrients
- It reduces soil erosion as it increases the amount of water getting into the soil.

