

## Solar lights

Mary's kerosene lamps do not give enough light, and the fumes are bad for her family's eyes. She finds it difficult to see to work on her beads in the evenings, and her children find it hard to do homework.

She was given a d:Light S250 lamp, which charges outside in the sun with a solar panel. When the light is fully charged, which takes about 6 hours, it can give her 4 hours of very bright light, or 100 hours of low light. The lamp gives five times as much light as a kerosene lamp. The charged lamp can also be used to charge her phone so she doesn't have to go to a kiosk any more.

For more information, SMS 'DLIGHT' to 30606 or visit their website at [www.dlightdesign.com](http://www.dlightdesign.com)



The solar light has 5 times as much light as a kerosene lamp, so it is better for your eyes

## Improved cooking fire

Mary's open three stone cooking fire made a lot of smoke, which made her and her kitchen dirty. The smoke also hurt her eyes and chest, and the fire used a lot of wood.

The people from **Ezy Life** gave Mary a new jiko, called the **Envirofit G3300**, which does not use a lot of wood and cooks food quickly.

Also, it does not make much smoke, so Mary will be healthier, her kitchen will be cleaner and she will use less wood to cook.

For more information, SMS 'JIKO' to 30606



The Envirofit G3300 Jiko from Ezy Life will use less wood and make less smoke



# Series 2: Episode 7

## Mary and Robert's farm - Maseno

This leaflet contains information on: Soil fertility, planting sukuma, fattening cattle, growing more maize with Push Pull, solar lights, rain water harvesting and better jikos.

## Soil fertility

Mary's soil was not well – her vegetables were not growing properly. The Shamba Shape Up team sent a sample of her soil to the laboratory for testing.

The laboratory sent back a report, which is like a doctor's report telling you what to do to make your soil better. Her pH was good. The pH should be between 6 and 7 – this is important because your plants can take more food if the pH is right. If the soil is too acid, lower than 6, the plant cannot take as much food as possible and will die quickly in drought. If your soil is too acid, speak to your agro dealer or extension officer to see how much lime to add.

Mary's soil did not have enough phosphorous or nutrients. When she picks the soil up in her hand, it feels sticky. This means her soil does not have enough organic matter in it. So, to fix these problems, she needs to add fertiliser and manure. Manure will bring nutrients and also make the soil hold together better, so it is not slippery or sticky. The best time to add fertiliser and manure is at planting time.

Parameter	Unit	Result	Too Low	Optimum	Too High
ph		6.5			
phosphorus (p)	ppm	30			
potassium (k)	ppm	1000			
Calcium (Ca)	ppm	8000			
Magnesium (mg)	ppm	893			

A soil report will show you which things are too low, too high or just right in your soil, and how to fix this.

## Planting sukuma and other vegetables

Mary was planting sukuma seedlings. It is important to add fertiliser and manure at planting, and to space the plants so that they can get enough sun, food and water without crowding. All vegetables need to be spaced properly and fed well, with good water. Sukuma should be planted in rows 2 feet apart, with 2 feet between plants. Use the list to help you plan how to plant your mbogas!

## Plan your planting like this:

1. Dig the shamba and level the surface so it is flat
2. Mark the rows for your vegetables
3. Mark the holes for seeds or plants on each row
4. Dig the holes
5. Add 2 handfuls manure and 1 teaspoon fertiliser (like TSP or DAP) to the hole and mix with the soil
6. Plant the seedling or seeds
7. Cover with soil
8. Water well!

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## Push Pull technology for better maize and sorghum harvests

Mary used to have a big problem with her maize. She got only 4kg of maize from her shamba. This was because she had problems with Striga weed and Maize Stalk Borer.

Striga is a weed that grows into maize and sorghum, stealing all the food from the maize or sorghum so your crop does not give you a good harvest.

Stalk borer is a caterpillar of a moth, which lays eggs on maize and sorghum leaves. The caterpillar goes into the stem of the plant and eats it. This makes the stem weak and it can break. You need to pull out the stalks which have the borer inside



*Striga looks like a pretty flower in your field, but it kills your maize and stops it making cobs*



*Stalk borer eats the inside of your maize stalks, so the plant dies or breaks and you don't get a harvest*

Mary fixed her problem by using the Push Pull method. This does not use any chemicals, only two common plants mixed with your maize or sorghum – Napier Grass and Desmodium. The Stalk Borer moths do not like the smell of Desmodium, and are pushed away to lay their eggs on the Napier Grass, planted around the maize plot. Napier Grass makes a sticky water when the borer tries to eat it, and kills the borer. Mary says she got 80kg of maize when she first used this method. That is 20 times more than what she used to get from the same shamba.

*This is how she did it:*

Start by marking out your field like the one in the picture

1. Make 3 lines of Napier grass, 3 feet apart and 3 feet away from the maize or sorghum plants.
2. Make rows for maize, starting 3 feet away from the Napier grass. Make the rows 2 ½ feet apart, with 1 foot between planting holes. Use manure and fertiliser, and 2 certified seeds, in each hole.
3. Make rows for the Desmodium between the maize rows. Plant desmodium vines in the rows.
4. Water and weed the plot well and it will not let any Striga grow in the plot, or any stalk borer eat your maize.
5. Keep the desmodium and Napier tidy but cutting back when it gets too bushy

You can use the desmodium cuttings and Napier grass to make very good feed for your cows, goats or sheep.

The desmodium is also good for the soil, making it healthier.

For more information, SMS 'PUSHPULL' to 30606



## Fatten your cattle for market

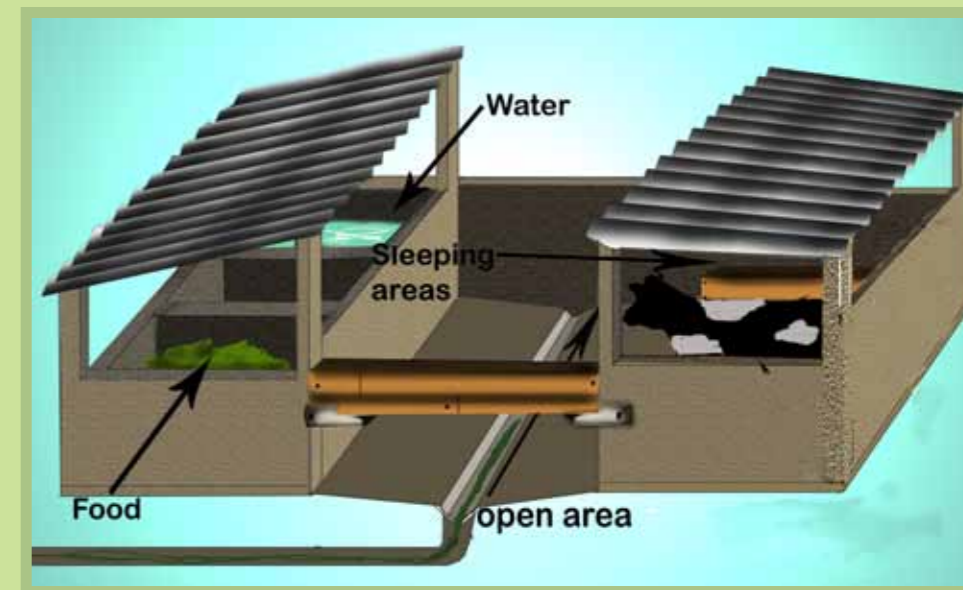
Mary had two beef cattle that she wanted to sell to buy a dairy cow. Her cattle were thin and not well. They were grazing outside.

### Zero grazing

The Unga expert told Mary that she needed to put her cattle in a shed, and feed them there. When the cattle do not walk around, they get fat and healthy more quickly. This is called zero grazing. For her 2 cattle, she needed to build a shed 9 feet long by 8 feet wide.

The shed needs a dry food trough for supplements, a trough for fodder, a small box for a mineral block and a trough for clean water. Each animal needs a clean, dry sleeping place under a roof.

The shed should also have a clean, dry floor, which slopes away so the manure runs off, and you can use it to improve your soil. The shed will also need a clean place close by for chopping food for the cattle.



### Feeding the cattle

You will need to feed the cattle enough fodder, like grass, napier, sorghum stover, maize stover, each day.

If you are feeding a cow only dry food, then you need to give the cow 2.5% of its body weight in food. So, if your cow weighs 200kg (a vet can help you estimate this), 2.5% of 200kg is 5kg dry matter. If you are feeding the animal fresh food, like grass, you need to increase the amount of food to about 100kg.

Cut the food very small so they can use it. Cows cannot eat big pieces of food. If you are using silage, each animal will need 15kg per day.

You will also need to give the cattle feed supplements. Unga recommends Unga Afya Meal for beef cattle. You will also need to give the cattle a mineral block to lick, like Unga Afya Bora Stock Lick. The manufacturer will tell you how much to feed the cattle.

Remember, supplements are only useful if the cattle are getting enough fodder too.

It is also very important that the cattle get lots of fresh water every day, as this will help them to eat more, and keep them healthy.

For more information, SMS 'ZERO GRAZING' to 30606

*To build a 9 by 8 foot cow shed you will need:*

- 14 wood posts – 9 feet long
- 30 round poles
- 9 off cuts
- Murrum for the floor
- 4 mabati sheets
- 1 pair of hinges
- Nails
- Wood preservative
- Wood planks to make food trough
- A drum cut in half for water

