

# Natural gardening



**Sustainable techniques  
from Africa to try in  
your garden**

## New life for old soil

***“The principles of organic farming are the same in the UK and Africa. It’s just some of the crops that are different.”***

Timothy Njakasi, Agricultural Extension Officer, Send a Cow Uganda.

About 70% of Africans depend for survival on the food they can produce from their land. Yet average plot sizes are getting smaller, and soil quality is deteriorating.

As well as giving livestock, Send a Cow trains poor rural families in natural farming methods that enable them to grow more food without harming their land. The key principle is to integrate livestock and crops so nothing goes to waste – whether that’s cow dung, vegetable peelings, or washing-up water. Simple – and cheap!

The result: crop yields increase – sometimes four or five-fold – so families have more to eat and sell. They can grow new types of fruit and vegetables, and gradually grow their way out of poverty for good.

These tried and tested techniques are based on traditional organic methods that have fallen out of use, as well as modern scientific research. Why not adapt them for your own garden?



Andrew and Rose Odongo’s small patch of land in Uganda used to become parched in the dry season. In the wet season, the rain would simply run off. The family ate one meal a day.

Since receiving Send a Cow training and a cow, Rose and Andrew (pictured above) use compost to keep their soil moist. By incorporating it into double dug beds, they get 13 baskets of tomatoes a week instead of two, which they sell to pay for school expenses and clothes. They have introduced other crops to their land to eat and sell – including papaya, which they had previously thought impossible.

Now the family eats three meals a day. They are all healthier, and the children no longer have to stay home from school to work in the fields.

Their plans for the future? *“To widen our knowledge of organic technology,”* says Rose.

Send a Cow is a Christian charity that enables poor farming families in 10 countries in sub-Saharan Africa to become self-sufficient by providing them with livestock, training and advice. We work with some of the most vulnerable groups in Africa, including children orphaned by war, families affected by HIV/AIDS, and disabled people.



# Magic muck

***“Feed the soil and the soil will feed you.  
Keep livestock and the livestock will  
keep your crops.”***

Patrick Fedrick Wangao, Tanzania.

Compost improves the structure and water-holding capacity of the soil, and adds nutrients to it. It recycles household and farmyard by-products – especially manure – and saves impoverished families the expense of commercial fertiliser.

There are many ways to make compost: this method (opposite) is taught in the semi-arid region of eastern Uganda. In the UK, make sure you keep it well covered to stop it becoming waterlogged.

Enoch Pasire demonstrates a stickometer, Uganda



## **How to make compost:**

1. Mark out an area 2m x 0.5m in a shady position.
2. Hammer 1.5m tall posts firmly into the ground at each corner.
3. Dig the earth about 8cm down, then till.
4. Layer the following:
  - *Dry matter: to add carbon and improve soil structure*
  - *Urine or water: to help the heap rot*
  - *Ash: to add potassium and aid breakdown*
  - *Animal droppings (fresh or dry): to add nutrients and improve structure*
  - *Top soil: to introduce insects and worms*
  - *Green plant materials: for nutrients*
5. Keep layering until the heap is 1m high – the best height to achieve the perfect composting temperature of 60°C.
6. Insert a long stick (a ‘stickometer’!) diagonally through the heap, so it goes through all layers.
7. Cover the heap so that important gases and nutrients do not escape.
8. After seven days, pull out the stick. If there is any white on the stick, this is fungus. Make a hole in the heap at the corresponding point, and pour in water.
9. After 14 days, turn the heap. You no longer need to keep it in layers.
10. Cover it again, and leave it until it looks like soil. The time needed depends on the material you have used and the climate.

# Unlocking the secrets

***“A keyhole garden has revolutionised my vegetable production.”***

Nicola Hobbs, Suffolk, UK.

Keyhole (or kitchen) gardens are heaps of soil based around a compost basket that continually feeds the garden as it grows. They're a great way to get the most out of kitchen waste. They grow lots of vegetables in a small area, all year round.

Keyhole gardens enable families in the mountains of Lesotho to grow lush vegetables



## ***How to make a keyhole garden:***

1. Find a sunny area near your kitchen.
2. Attach string to a wooden peg, and place the peg where you want the centre of your garden to be.
3. Use the string to mark out two circles: an inner one with a 0.5 metre radius, and an outer one with a 1.5 metre radius.
4. Put posts approx 1.5m high in the ground around the inner circle and secure them with string – this is your compost basket.
5. Mark out the outer circle with large rocks – this is the border of your keyhole garden. Add more layers of rocks to raise the garden (good for older people or those with disabilities).
6. Leave a 'v' shaped path approx. 0.5m wide for access to the compost basket.
7. Fill the basket with a 1m high pile of compost.
8. Mix one part compost to two parts top soil, and heap around the basket so it slopes down in a dome shape towards the border.
9. Plant up one section at a time to give yourself a continuous supply of vegetables.
10. Add kitchen waste to the compost basket, and water regularly when dry.

The keyhole garden at Send a Cow's UK office, before planting



## Bags-for-life

***"Now I have seen it is possible to grow vegetables on my land I want to put bag gardens everywhere!"***

Béatrice Baraminza, Rwanda.

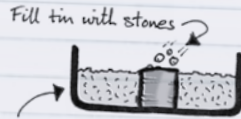
Bag gardens are multi-storey vegetable gardens in a sack, ideal for farmers with a limited supply of water and only a small plot of land. The central column of stones provides drainage and aeration. African families put them near their homes, where they can easily be maintained by children.

Béatrice Baraminza and her husband display one of their bag gardens



### **How to make a bag garden:**

1. Put an empty tin with the two ends removed in the bottom of a sack and fill the tin with stones.
2. Pack a mixture of soil and compost (two parts soil: one part compost) around the tin, then remove it.
3. Move the tin up, and repeat stages one and two until your sack is filled with a central column of stones surrounded by a soil-compost mix.
4. Support your bag with two sturdy sticks either side to prevent it slumping.
5. Cut holes in the sides of the sack.
6. Plant your seeds or seedlings in the holes and on the top.
7. Water your garden regularly from the top, directly onto the column of stones. This filters water throughout the bag garden.
8. Harvest a regular supply of vegetables!



Pack with soil

Move up tin, fill with more stones etc.



Water in here.  
The stones filter  
the water to  
the plants.



# Survival of the fittest

***"I have never bought fertiliser for my farm. I cannot afford it, and I know how bad it can be."***

Helen Kongai, Uganda.

Plant tea makes crops more resistant to disease, is easy to make – and it's free! Natural pesticides mean fewer crops for pests, and more for the family.

## ***How to make natural pesticide:***

(Ingredients vary depending on the pest.)

1. Crush up:
  - Seven cups of marigold leaves (to kill ants, caterpillars, and nematodes) or
  - One cup of chilli (to kill ants, aphids, caterpillars, and beetles) or
  - Seven bulbs or onions or garlic (to kill ants, aphids, and caterpillars) or
  - Six cups of tomato leaves (to kill caterpillars).
2. Add five litres of water.
3. Add three spoons of baking powder, a few spoons of paraffin (optional), a piece of biodegradable soap, and wood ash for sucking insects (such as aphids and whitefly).
4. Leave it for four days to soak. If you want it more quickly, boil everything up, and leave it for a day.

## ***Is this natural pesticide 'organic'?***

Views differ about which gardening practices are 'organic'. We take a pragmatic approach, and encourage farmers in Africa to use locally available resources rather than spend money on commercial pesticides. Many farmers find a small amount of paraffin makes pesticides more effective – but leave it out if you are concerned.

## ***How to make plant tea:***

1. Chop up a mix of soft, hairy and leguminous leaves (eg docks, comfrey and clover).
2. Put into a bucket until the bucket is three-quarters full.
3. Cover leaves with a mixture of one part animal urine to two parts water (or just water).
4. Add a pinch of ash, and stir.
5. Cover and leave for three days.
6. On Days 4-6, stir once per day.
7. On Day 7, remove the leaves and put on your compost heap.
8. Cover the liquid, and leave in the shade for 14 days.
9. Dilute the tea (one part tea to two parts water), and pour one cup onto plant roots.



Bernard Osbutey makes plant tea, Ghana

## Every drop counts

***“During the dry periods I used to buy vegetables. These days I don’t buy vegetables even in the dry period. The kitchen garden is fertile because I use compost with animal droppings.”***

Anastasia Awuor, Kenya.



Helen Kongai weeds onions watered by rainfall from an overhanging roof, Uganda



Nuliat Chanda with her mandala garden, Uganda

### **Top 10 water saving tips**

1. Use compost in keyhole gardens, double dug trenches (see over), or just dug into your soil.
2. Use rainwater by creating a vegetable bed directly underneath an overhanging roof (if you don't have a gutter), or by collecting it in a water butt.
3. Mulch your plants with a layer of dried grasses or leaves to stop the water evaporating.
4. Set up a drip irrigation system by suspending plastic bottles or bags over thirsty plants. Make tiny holes in the bottom so they release water gradually, letting it seep into the soil rather than evaporate.
5. Dig trenches along the contours of sloping land. This traps rainfall to prevent it flowing away and eroding the soil.
6. Use 'grey' water, such as washing-up or bath water.
7. Make a bag garden or a mandala garden, which consists of double dug vegetable beds in a ring around a central pit, with a trench to channel in rainwater.
8. Plant crops which need little water – such as carrots and beetroot.
9. Shade your seedlings – by intercropping them with taller plants, or by making a covered seed nursery.
10. Make hollows around larger, perennial plants to trap rainwater.

## Skills for life

Here are a few of the other sustainable farming methods that rural families in Africa learn in their Send a Cow training. Some may be familiar.

**Raised beds** are ideal for elderly or disabled farmers. They improve drainage, and can extend the growing season in highland areas as they warm up quickly.

**Double digging** involves digging a 30cm deep trench, loosening the soil at the bottom, adding compost, and replacing the topsoil. It aerates the soil and improves its water-holding capacity.

**Grafting** enables farmers to grow new types of fruits so they are better protected against market trends. For example, farmers in eastern Uganda grow Washington navel oranges by grafting them onto the rootstock of a local bitter lemon tree.

**Intercropping**, which involves cultivating two or more types of plant together, can maximise land use and benefit all plants. For example, beans fix nitrogen in the soil for maize, while maize provides sturdy stalks that beans can climb up, as well as shade.

**Liquid manure** is a great fertiliser, and does not burn plants as manure applied directly can do. Fill a bag with droppings and leave to soak in a container of water for a week to create a tea. Dilute the tea (two parts water: one part tea) before use.



Grace Oranja shows her intercropped bananas, calliandra, and cassava, Kenya



Tebebu Orcho grafting trees, Ethiopia



Daphrose Mukaremera and her son by their double dug beds, Rwanda

## Want to know more?

- Book a speaker for your gardening club, horticultural show or any other group meeting or event by contacting our Ambassadors Secretary at [jodie.sampson@sendacow.org.uk](mailto:jodie.sampson@sendacow.org.uk) or by calling: 01531 821 751.
- Grow a bag garden or keyhole garden with your children or grandchildren – there's loads more information at: [www.sendacow.org.uk/africangardens](http://www.sendacow.org.uk/africangardens)
- Call us to order our Cabbages and Cowpats DVD for use in primary schools.
- Visit [www.sendacow.org.uk](http://www.sendacow.org.uk) for lots more information about our work.
- Make a donation by visiting our website or calling us.

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