

# Food for Life

SILVER



Welcome to the Food for Life programme. This is the second part of an exciting journey in learning how to grow food for your family and friends, and maybe even sell it.

Follow these easy steps carefully and discover how rewarding, both nutritionally and financially, it can be.

By being a Scout, you are indeed “Prepared for Life”.



# Organic soil nutrition

To create healthy, living soil in your garden, you need to do the following:



**Make a compost heap or an earthworm farm:** this is one of the best ways of making plant food to feed the soil.

**Make a trench bed:** this means making a compost heap in your trench. You can then plant your bed immediately.



**Use animal manure:** use older, matured manure. It can be spread over a bed and dug into the soil.

**Grow green manure crops:** grow plants in the bean family (like beans and peas) until they flower, and then dig them into the soil.



**Mulch your garden:** this will keep the moisture and temperature in the soil constant.

**Use natural fertilizers:** e.g. bone meal and wood ash.

**Make liquid manure teas:** This can be made from animal manure and certain herbal plants.



By doing these things you will copy nature's way of creating healthy soil.

# Making compost

## Why?

- It is easy.
- It is the best way to make the soil better.
- It helps to fight soil diseases.

It is best to make your compost heap in a shady place that is protected from wind.

All the rubbish that you used to make your trench bed can also be used to make compost. Have a look at Good Food and Bad Food on page 9 in the Food for Life – Starter book, to remind you what you can use.

The heap must not be smaller than 1m by 1m by 1m, otherwise the material will not break down properly. Water each layer as you build the heap.

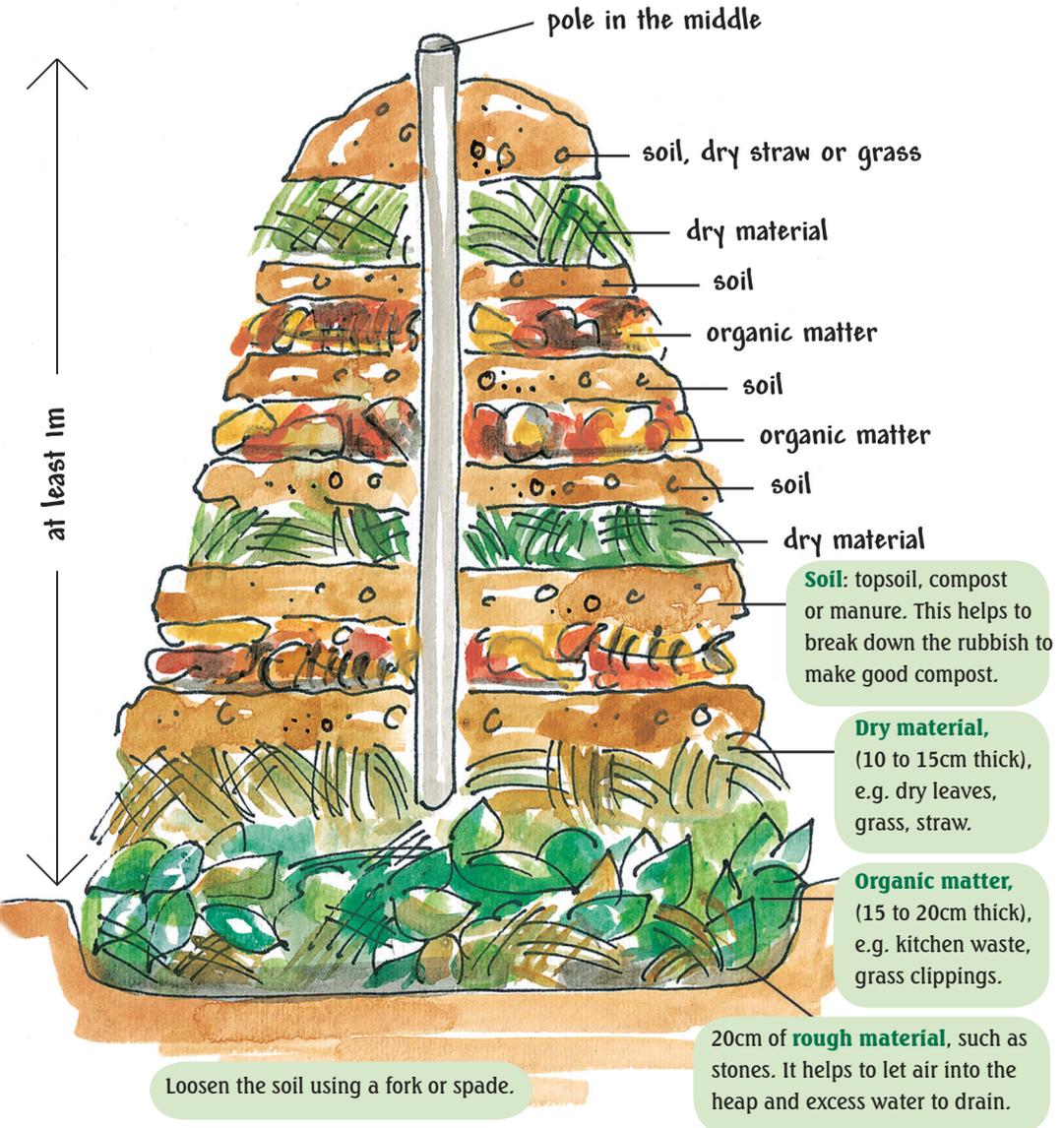
## Remember

- Keep the heap as wet as a squeezed-out sponge or cloth (not too wet).
- Do not make the grass or leaf layers too thick, because thick layers will stop water and air from getting to the rest of the heap.
- Cut up big vegetables like cabbage and mealie stalks before putting them in the heap.
- Mix your heap every three to four weeks and add some chicken manure (if available).
- Add water if the heap is too dry.
- It takes three to six months to get good compost.

## When to use

Use the compost when all the material is broken down. It will then be brown and crumbly.

# Making a compost heap



Remember to water each layer.

# Making an earthworm farm

Earthworms are good at making healthy compost.

This is how you can make an earthworm farm (follow the steps from one to eight):



1. Make a few holes at the bottom of an old dustbin. Raising it on bricks is a good idea. Choose a very shady place for your bin.
2. Put in a layer of small, loose stones.
3. Put a board or thick layer of plastic with a few small holes punched in it on top of the stones.
4. Make a bed of cardboard, soggy leaves or compost.
5. Put some worms in – a few hundred at least.
6. Throw chopped kitchen rubbish in the bin.
7. Place newspapers on top. This keeps the water in.
8. Put the dustbin lid on. (Cut the lid so that it can go up and down in the bin depending on how much material you have in it.)

You can start your earthworm farm with worms that you find in the garden, or you can buy them.

You must keep on adding kitchen rubbish and also make sure that everything in the bin is moist, but not sopping wet.

### **When you want to use the compost:**

- Take the lid off the bin for an hour (but not when it is too hot).
- Then take out the top layer to use in your garden – the worms will all be at the bottom of the bin.
- Remember to replace the lid.

### **If your worm farm starts to smell it could be because:**

- There is too much rubbish – do not add more for a while.
- It is too wet inside – throw some water out, or do not add more for a while.
- There is too much orange and lemon off-cuts in your bin – do not add more.
- The temperature is too hot or cold – move the bin to a warmer or colder spot.

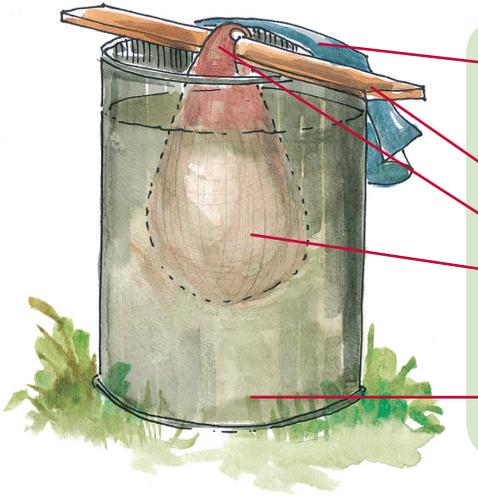


# Making tea manure

Tea manure (liquid manure) is a cheap way to feed plants and the soil. It is also easy to make. Remember:

- It is best to use chicken manure.
- But you can also use seaweed or herb plants (such as comfrey and stinging nettle).

How to make tea manure (follow the steps from one to five):



1. Fill a 200l drum with water.
2. Put two buckets of manure, seaweed or fresh herb plants in a cloth sack.
3. Tie the neck securely.
4. Tie the sack to a stick.
5. Cover the drum with a lid or plastic.

- Move the stick up and down and stir the water every three days. If you are using manure, it will have a strong smell.
- When the water turns brown (after about three to four weeks), it is ready to use.
- Mix one litre of tea manure with six litres of water. The resulting solution will look like weak tea.
- Using a watering can or bucket, gently pour the solution on the ground around plants. Do not pour it on the leaves of plants, because they will then get burnt.

## Use to:

- Feed young plants (seedlings) in the first four to six weeks of growing.
- Feed your plants once a week, early in the morning.

# Crop rotation

There are three groups of vegetables. Every season you should plant a vegetable from a different group in a row. This is called crop rotation.

## Why should crops be rotated?

- **To keep the soil healthy**

If the same kind of vegetable is planted every season, the soil can become unhealthy and nothing will grow well in it.

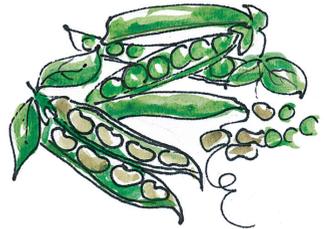
- **To prevent diseases**

One kind of vegetable will not easily catch a disease from another kind.

## The three groups of vegetables

### Root vegetables:

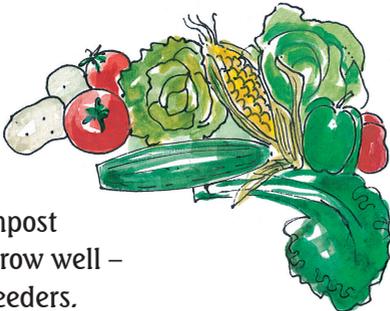
grow well even with a small amount of compost or old manure – they are light feeders.



**Bean family:** these vegetables need more food than root vegetables – they are medium feeders. They give more food back to the soil when they are fully grown than they used while they were growing.

### Leaf and fruit vegetables:

these vegetables need a lot of compost and manure to grow well – they are heavy feeders.

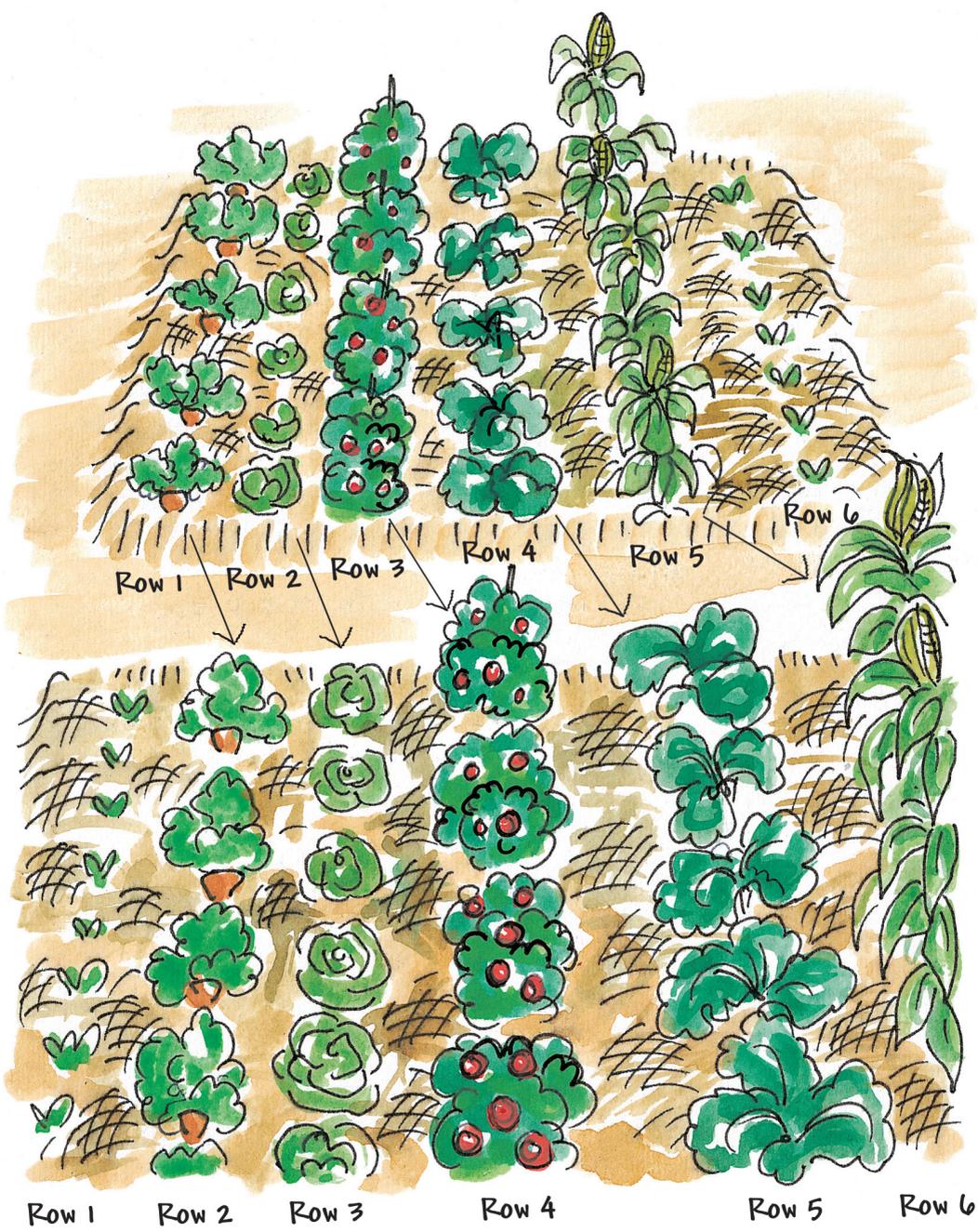


Here is an example of how you can do crop rotation:

	1 <sup>st</sup> season	2 <sup>nd</sup> season	3 <sup>rd</sup> season	4 <sup>th</sup> season
<b>Row 1</b>	Bean family, e.g. peas, beans, celery, leeks	Root vegetables, e.g. carrots, parsnips, beetroot	Leaf and fruit vegetables, e.g. cabbage, cauliflower, turnips, onions, lettuce	Potatoes
<b>Row 2</b>	Root vegetables	Leaf and fruit vegetables	Potatoes	Bean family
<b>Row 3</b>	Leaf and fruit vegetables	Potatoes	Bean family	Root vegetables
<b>Row 4</b>	Potatoes	Bean family	Root vegetables	Leaf and fruit vegetables

Look at page 10 for an illustration.

Remember to write down what you planted in each row!



Row 1

Row 2

Row 3

Row 4

Row 5

Row 6

# Succession planting

If you have lots of space and you can make four trench beds, you should stagger the planting of your vegetables. You will then have fresh vegetables throughout the year.

**Bed 4:** Vegetables are at the seedling stage

**Bed 3:** Young vegetables growing



**Bed 2:** Vegetables are almost ready for harvesting

**Bed 1:** Vegetables are ready for harvesting and eating

# Caring for your vegetables

It is important to take good care of your vegetables. This is what you should do:

## Watering

- Young plants daily, early in the morning or late in the afternoon.
- Bigger plants less often – 2 to 3 times per week.
- Remember to put mulch on your beds, because it helps to keep the soil wet.



## Thinning and filling gaps

If there are too many plants growing in a small space, they will not grow well. You will then need to take some plants out. But if some plants die, try to plant new ones in their place.



## Weeding

Take the weeds out of your garden. They steal the food and water that your plants need.



## Staking

If you are growing tomatoes or beans, you must remember to tie the stems to supporting sticks as they grow taller.



## More feeding

If your plants turn yellow, feed them with compost or manure.

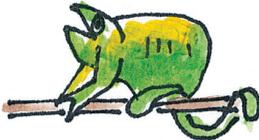
# Insects and diseases

You must make a distinction between helpful insects and creatures and harmful ones (those that attack your fruit and vegetables).

You should only use natural ways of controlling pests and diseases. Chemical poisons are very dangerous, because they:

- Not only kill the harmful insects, but also the helpful ones.
- Can make people very ill and even lead to death.
- Are very expensive.
- Pollute the environment.

## Helpful insects and creatures



**Chameleons:** eat bad insects and pests



**Ladybirds:** eat aphids as well as maize bugs



**Frogs:** eat bad insects and pests



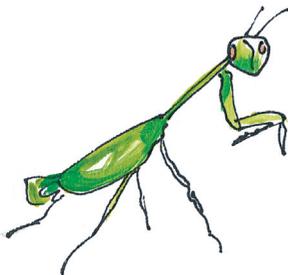
**Spiders:** all spiders eat bad insects and pests



**Earthworms:** help to make compost and put air into the soil



**Hover flies:** when their eggs hatch, the larvae eat aphids

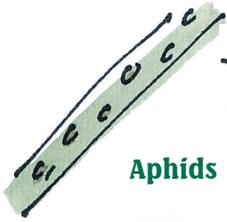


**Praying mantis:** eat a wide variety of harmful pests, including aphids and grasshoppers

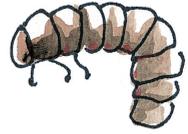
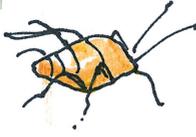


**Wasps:** baby wasps eat insects which are stung by the parent

# Bad (harmful) insects and creatures



Aphids



Cutworms



Caterpillars



Mildew



Snails



Slugs



Beetles

## How to prevent bad insects and pests in your garden

Prevention is always better than cure. The following are preventative methods for controlling insects and plant diseases:

- **Mixed gardens:** it is good to plant different kinds of vegetables, flowers and herbs in your garden. Herbs and vegetables like garlic and onions keep insects away.
- **Good soil practices:** healthy soil gives you healthy plants. Healthy plants are more resistant to attack by pests and diseases.
- **Crop rotation:** see page 8
- **Time of planting:** insects/pests breed most in hot weather. If you plant early in the season you will avoid the worst time for insects.
- **Hygiene in the garden:** remove and burn all diseased plants. All healthy plants that have been harvested can be used to make compost or put in the trench bed.
- **Watering:** if you do not water your plants regularly, the plants will become weak. Weak plants are easy targets for insects.
- **Healthy seeds:** collect seeds from healthy plants and plant vegetables that are suited for your geographical area.

## Control methods

You can make your own natural insecticides that will keep insects away from your plants.

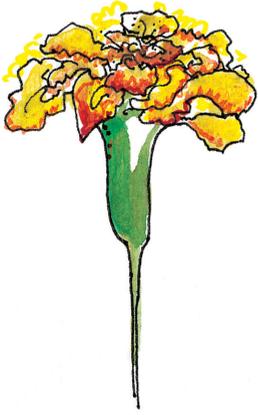


Collect small leftover pieces of household soap. Add a little water and soak. Dilute the soapy water and use as a spray to combat aphids on the leaves of fruit trees. Also try painting the base of a fruit tree, to a height of about 60cm, with a strong solution of soft soap to stop pests attacking the tree.

Tomato leaves are effective against aphids, grasshoppers, flies and caterpillars. Crush the leaves and soak them in water to make a strong solution. Spray this solution on affected plants. Rain will wash the solution off the plants, so spray again after rain.

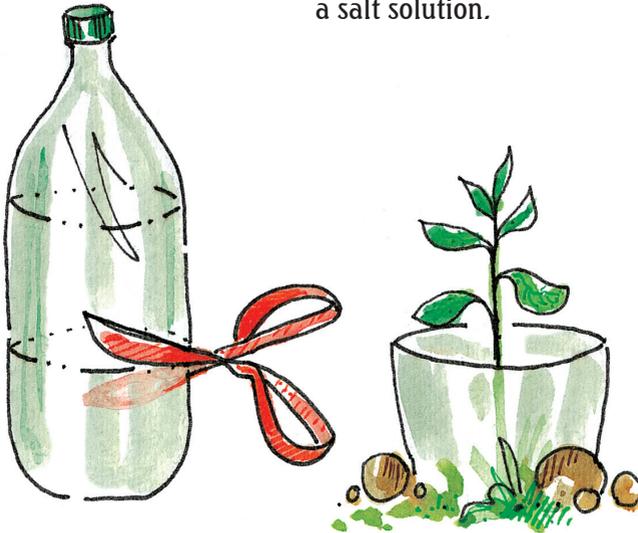


Soak onions, chopped and crushed, in an equal quantity of water. Strain the mixture and use as a spray against red spider and aphids. Onions are expensive to buy, but you can grow your own.



The attractive garden plant, the Marigold, can be used to make a “tea” that is effective against aphids and weevil eggs. Place a few handfuls of leaves (green or dried) in a container, pour boiling water over the leaves and let it stand overnight. Then strain it and spray on the affected plants.

Ordinary household salt can be used to deal with snails and slugs. Just sprinkle a little salt on them, or spray them with a salt solution.



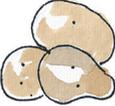
Milk cartons, 2l cooldrink bottles or yoghurt cups are useful for defending young plants, such as cabbage, cauliflower, lettuce and other, against cutworm. Cut off the top and bottom of the carton/bottle. Then cut the rest of the carton (depending on its size) to make two or three “collars”. Place a collar carefully over each young plant, pushing the base of the collar gently but firmly into the soil. This “fence” around the young plant not only prevents the cutworm from cutting the plant off at the base, but also helps protect the plant from the hot sun and wind.

# Companion planting

Most vegetables grow better if they are planted near to certain other vegetables or herbs. This is called companion planting. The following is a table of companion plants:

Vegetable	Likes	Dislikes
Bush beans 	Most vegetables, especially beetroots, carrots, celery, potatoes, radishes, strawberries, corn and leeks	
Climbing beans 	Maize and carrots	Onions, the cabbage family and sunflowers
Cabbage family, broccoli, strawberries and cauliflower 	Beetroots, celery, lettuce, onions, potatoes, tomatoes and bush beans	Climbing beans
Celery 	Bush beans, cabbage family, leeks, tomatoes and cauliflower	

Vegetable	Likes	Dislikes
Cucumbers	 Bush beans, cabbage family, maize, lettuce, radishes and sunflowers	Potatoes
Leeks	 Beetroots, bush beans, carrots, celery and onions	
Lettuce	 Carrots, radishes, onions, spinach and strawberries	
Maize	 All bean varieties, beetroots, pumpkin and squash family and potatoes	
Onions	 Beetroots, cabbage family, carrots, lettuce and leeks	

Vegetable	Likes	Dislikes
Peas 	Carrots, radishes, spinach and turnips	Potatoes and beans
Potatoes and sunflowers  	Bush beans, cabbage family, mealies and peas	Tomatoes, cucumbers, pumpkins and squashes
Squashes and pumpkin family  	Maize and radishes	Potatoes
Sunflowers 	Pumpkins and squashes and potatoes	Climbing beans
Tomatoes 	Asparagus, celery, onions and cabbage family	Apricot trees and potatoes

Herbs make good companions for food plants. You may not know all of them, but try them. If you plant herbs between vegetables, it can benefit the crop in different ways:

Herb	Vegetable and fruit companion
<p data-bbox="73 395 135 427">Basil</p> 	<p data-bbox="337 395 1030 507">Attracts pollinating insects to cucumbers, prevents fungal diseases on baby marrow and improves the taste of tomatoes, lettuce and parsley</p>
<p data-bbox="73 651 191 683">Coriander</p> 	<p data-bbox="337 651 801 683">Plant around the garden to repel pests</p>
<p data-bbox="73 826 118 858">Dill</p> 	<p data-bbox="337 826 997 890">Improves the seed germination of cucumbers, cabbage and beetroot</p>
<p data-bbox="73 1029 146 1061">Garlic</p> 	<p data-bbox="337 1029 1046 1093">The smell protects strawberries, cucumbers, carrots, lettuce and tomatoes from fungal diseases and deters mice</p>
<p data-bbox="73 1257 174 1289">Oregano</p> 	<p data-bbox="337 1257 751 1289">Deters insects from broccoli plants</p>

Herb	Vegetable and fruit companion
Parsley 	Acts as a snail deterrent for onions and radishes and improves celery, leeks, peas and tomatoes
Peppermint 	Plant with cabbage
Rosemary 	Plant with beans, cabbage and carrots
Sage 	Plant with cabbage and carrots

Today many people make their own small herb gardens. Herbs have culinary and medicinal qualities, and can be sold as bagged plants or as fresh or dried herbs.

# Fruit trees

By planting fruit trees and caring for them, you are creating a food source that can last you for a lifetime.

It is important to choose the best kind of trees for your weather conditions and soil type. Look around your neighbourhood and choose fruit trees that are doing well, and get advice from your neighbours, local nursery or agricultural extension officer.

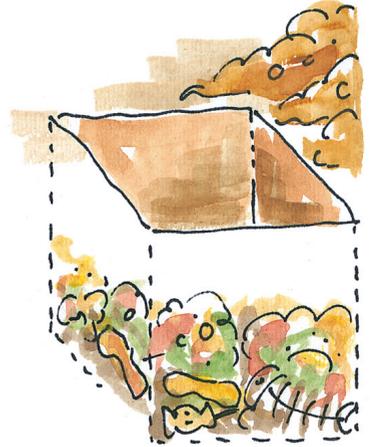
## Guidelines for planting fruit trees

- Many fruit trees can be grown from pips, but it then takes a very long time to grow and does not always produce good fruit. Generally you will get the best fruit from planting small trees.
- Fruit trees must be planted in full sun.
- Choose a place where the soil drains well.
- Place your trees correctly, at least three to four metres apart.
- Some fruit trees do not like wind.



- Dig a square hole between half a metre and one metre wide on both sides and as deep.

- Mix the loose soil with compost or old manure:
  - Poor soil: one part soil to one part compost.
  - Good soil: two parts soil to one part compost.
- Add one to two cups of bone meal, if you have any available, to the bottom of the hole.
- Fill the hole with the mix and water the hole if the soil is dry.



- Remove the plastic bag/pot around the plant roots. Try to keep the soil intact while doing so.
- Place the tree in the middle of the hole, with the stem straight up.
- Fill the hole with the soil and press it down firmly.
- Make a basin around the tree to hold the water.
- Water your tree well and put mulch around the tree to the edge of the basin.
- Ensure that there is protection from animals.

# When to plant

Plant the following trees during the cool moist seasons (Central province, Limuru): apples, apricots, berries, figs, peaches and nectarines, pears and plums.

Citrus, granadillas and guava trees can be planted at any time of the year.

Paw paws should be planted in March and strawberries towards the end of the dry season.

## Taking care of your tree

- Water your tree once or twice per week for the first year; thereafter it can be watered every second week.
- Keep the area around the base of trees free from grass and weeds in the soil.
- Mulching around your tree helps the soil to hold water and prevents weeds from growing.
- If your garden is very small or there is little water available, you can plant vegetables and herbs in the basin around the tree.
- Feed your trees with compost or old manure at least once a year as follows:
  - Years one and two: one bucket of compost/manure and half a cup of organic fertilizer (bone meal or wood ash).
  - Years three and four: two buckets of compost/manure and one cup of organic fertilizer.
  - Year five onwards: three buckets of compost/manure and one to two cups of organic fertilizer.
- Most fruit trees need some pruning. You will learn more about it in Food for Life – Gold.

# Collecting rain water

Most of Africa has a very low rainfall and water is therefore precious. You can build a water collector to collect water for your garden.

- Place four poles in the ground during dry weather. Tie a clean sheet over the poles when it rains and place a container in the middle underneath it. You can also use a plastic sheet with a small hole at its lowest point (in the middle).



- Place a container under the outflow of your roof gutter. Do not collect the first rains for drinking because the roof will not be clean yet.



- Use iron sheets to build a rain trap to channel rain water into a container.



- Build a small dam covered by plastic to catch heavy rains.

Look in *Be Prepared for Life, Kit Four: Water for Life* for more ideas on collecting water, cleaning water and caring for water. It contains great ideas for activities for your patrol.

# Permaculture

Permaculture uses a combination of methods to design and develop small growing and living systems. The idea is to make an environment where all the different elements support each other to create a productive system, where the least amount of energy is used.

It is important to observe your area and make a list of all the resources that are available locally and how best to use them.

## Some permaculture principles are

- Everything in the system must have at least two functions, e.g. a tree can be a windbreak, bear fruit and prevent erosion.
- There is a right time for everything, e.g. the season for planting a specific vegetable.
- Put things in the right place, i.e. where they are connected to, and supported by, other things (e.g. a food garden should be near a water source).
- Use biological resources – let nature do the work. Choose vegetables and fruit that are suited to the area.
- Plan for the system to be energy efficient – including human energy (i.e. put things that need the most attention nearest to your house).
- Encourage many different living organisms. Everything is connected to each other, e.g. aphids eat vegetables; ladybirds eat aphids; birds eat ladybirds. If a strong poison is used against aphids, it will also kill the ladybirds and birds. In time there will be nothing eating the aphids and you will not be able to get rid of them.
- Everything has a use. So if you have a flat tin roof, use it to collect rainwater. Use vegetable bags as shade cloth, and kitchen waste to make compost. Keep milk cartons, plastic bottles, tins, egg boxes, etc. to grow seedlings in.

Can you remember that these principles were used to decide on the best place for your vegetable garden, the right vegetables to plant in your area and using kitchen waste for your trench bed in doing the Food for Life – Starter badge?

# Nutrition and food preparation

## Balanced diet

To stay healthy you need to eat different kinds of food. To make it easier, food is divided into groups according to the work the food does in the body. You should eat enough food from each group every day.

### Group 1: Body-building foods

How much?

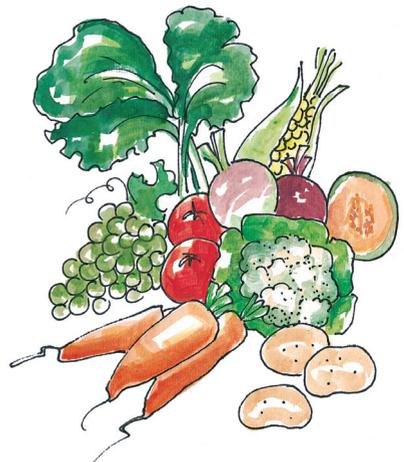
- Children and adults need at least two teacups of milk a day (mother's milk, cow's milk, maas, buttermilk or yoghurt); and
- a piece of meat, chicken or fish the size of a woman's palm; or
- one egg; or
- a piece of cheese the size of a matchbox; or
- two heaped tablespoonfuls (1/2 cup) of cooked dry beans, lentils or a soya product; or
- two level tablespoonfuls of peanuts or peanut butter.



### Group 2: Protective foods

How much?

- Eat at least a cupful of vegetables every day.
- Eat a fruit as often as possible, but at least once a week. Try eating it as a snack.



## Group 3: Energy food

How much?

- The amount of energy foods you require will depend on your age and on how active you are. Small children and elderly people need less than teenage boys who play soccer.
- You are eating correctly when a cereal product takes up most of the space on your plate. You should eat a cereal product, e.g. porridge, bread, rice or any other wheat or maize product, at every meal.
- Cereal products are good value for money.
- You are wrong if you think that cereal products will make you fat.



## Food preparation

The best way to preserve the nutrition of vegetables is to stir-fry them. Do it as follows:

- Cut the vegetables into thin strips or squares, about one cm wide.
- Heat a little oil or margarine in a pan.
- Fry the vegetables until cooked.



You can also bake your vegetables in the oven:

- Cut the vegetables as above.
- Dribble a little oil over the vegetables.
- Bake in an oven until cooked.

Vegetables that you can stir-fry or bake in the oven are carrots, sweet potatoes, beans, peas, maize pips, pumpkin, root vegetables, onion, broccoli (pieces), cauliflower (pieces), cabbage and garlic. You can add some of your herbs, like rosemary and thyme.

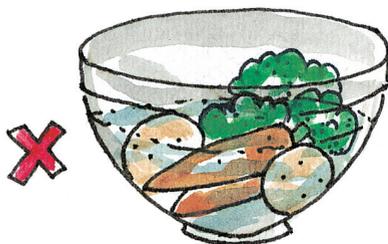
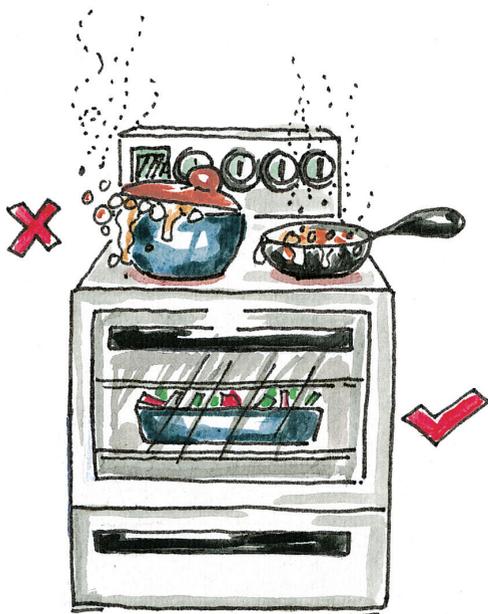
Do not cut vegetables before washing them. Also cook them whole with the skin on, and only cut them after cooking.

You can also boil vegetables, using only a little bit of water. You should not be able to throw away any water when the vegetables are cooked. If you do have water left, do not throw it away, but rather use it for soup or gravy. Vegetables that can be boiled are squashes, potatoes, maize, peas, pumpkin, root vegetables, onion, broccoli (pieces), cauliflower (pieces) and cabbage.

You can eat some vegetables raw as well, e.g. cauliflower, carrots and peas.

Eat vegetables as soon as possible after harvesting.

If you peel vegetables and wash them, you should not let them lie in the water, but use them immediately. If they lie in the water, valuable vitamins are lost. Rather scrub them with a hard brush and then rinse them.



## To earn the badge:



### Objective

By the completion of this stage the Scout will be able to provide nutritious vegetables for the family or community.

### Badge requirements

To obtain the badge you should be able to do all of the following:

1. Completion of the Food for Life Starter (Scout Programme) badge is a prerequisite for this badge.
2. Explain how crop rotation can ensure proper plant nourishment, minimise certain insect damage and provide sufficient vegetables all year round. Put crop rotation into practice by planting two different vegetables for two different seasons (these vegetables should be different from Food for Life – Starter or number 1 above).
3. Make and maintain a compost heap and use it for your second crop.
4. Explain how to care for your crops.
5. Name three insects or diseases that may attack your vegetables and explain how to get rid of them by using homemade/natural remedies.
6. Explain a method of collecting rainwater.
7. Explain permaculture.
8. Explain a balanced diet.
9. Demonstrate the correct methods of cleaning and cooking vegetables.

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