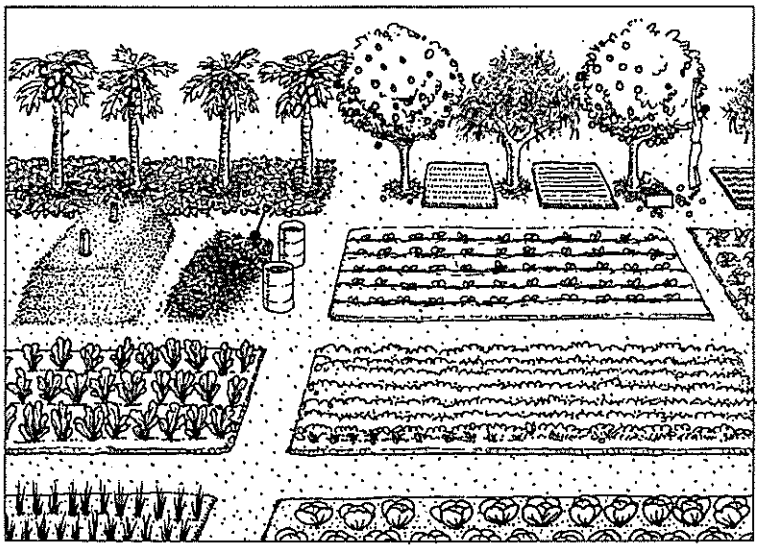
HEALTH GARDENING



A GUIDE TO
GROWING FOOD FOR LIFE

Compiled By:

THE VALLEY TRUST

In co-operation with:

UMGENI VALLEY PROJECT

ACKNOWLEDGEMENTS

This guide to growing food was compiled by Alistair Chadwick of Valley Trust, assisted by Mzo Maphanga of Umgeni Valley Project. Readers are invited to assist in improving this booklet by making suggestions for future editions

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HEALTH GARDENING

GROWING FOOD FOR LIFE

CONTENTS:

"To conserve the soil that has been bequeathed to us by a past generation is not an optional matter. It is our inescapable duty because our successors will classify us as either foolish or wise according to the manner we have handled our soil in our time."
Davidson Don Tengu Jabavu (1885-1959)

INTRODUCTION TO HEALTH GARDENING

Health gardening is a system of food production that involves learning from nature. This booklet is designed to help you in the learning process, and is not meant to be a definitive guide to organic gardening, conservation farming or permaculture. Rather it is an attempt to provide the most effective methods and strategies involved in food production that will enable you to produce food sustainably.

The criteria for sustainable food production can be summed up in one word – permanence. This means adopting techniques that maintain soil fertility indefinitely, utilize, as far as is possible, only renewable resources, that do not pollute the environment, and that foster biological activity within the soil.

Health gardening calls for observation of, and co-operation with, nature. With an understanding of how nature works to conserve and recycle water, nutrients and energy you can design a garden system to enhance these natural processes.

PREVENTING SOIL AND WATER LOSS

Soil erosion and excessive rainfall run-off are primarily caused by the removal of vegetative ground cover and are probably the most urgent problems facing gardeners and farmers today.

Bare soil allows rainwater to run off the soil at a fast and destructive pace. This results in crops being denied the moisture they need for healthy growth. As topsoil gets washed away so crop yields decrease because the plants do not receive access to the essential soil nutrients.

Hence attempts by many farmers to minimize the problem by practicing minimum tillage and techniques that do not disturb the soil.

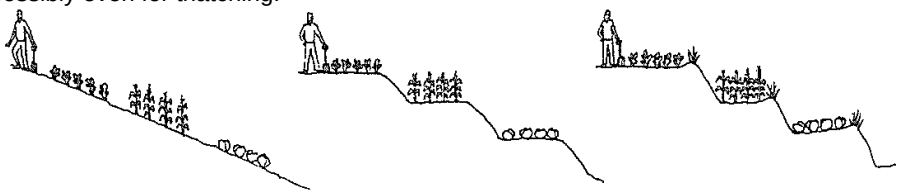
Sheet erosion is the loss of soil from the surface of an area and is the most damaging form of erosion, mainly because it is often not recognized and therefore seldom treated.

Trees by themselves do not prevent soil losses caused by sheet erosion. Forests do, with their carpet of fallen leaves and low growing vegetation. In areas where tree cover is not possible, vegetative barriers can be used to stop the loss of soil.

Fibrous-rooted shrubs and grasses planted as hedges along the contours of the land slow the run-off, spread the water about thus weakening its erosive power, and cause it to deposit its load of valuable topsoil behind the hedgerows. As a result the run-off proceeds gently down the slope without further erosive effect allowing water to sink into the soil.

On sloping land terraces, earthen embankments and contour banks are often constructed to slow erosion. Construction of banks makes the slopes steeper which, over time, will possibly erode away. In contrast the vegetative method of soil and moisture conservation uses nature to protect itself.

Earth contour banks can be replaced or strengthened by hedges of vetiver grass, which is probably the most suitable plant for this method of soil conservation. The grass root divisio9ns are planted in a single ploughed furrow at the onset of rains to form an unbroken hedge. Once they are established the hedges require little maintenance and can then be cut for mulch, the weaving of baskets and mats and possibly even for thatching.



Very poor Good Very good

SOIL CARE

A gardener's most basic and important raw material is the soil. The idea of protecting and working with the soil is fundamental to the practice of organic gardening.

The first aim must be to reproduce the structure of a biologically active and fertile soil. A good soil structure ensures the three most important characteristics of a fertile soil – good aeration, water-holding capacity and free drainage. This benefits all plants by allowing deep rooting and by providing resistance to drought, good nutrition and physical stability.

Adding organic materials to the soil is essential, but cultivation and growing practices have an important effect too. Some of the very effective methods and materials that you can use are listed below:

* **Animal manure** : improves structure and fertility. Fresh manure should not be used directly on the soil and is best when composted before use. This is because plants can be damaged by fresh manure.

* **Garden compost**: improves structure and fertility. Plant remains should be recycled, (excluding those from very resinous plants such as pines and gum trees).

* **Seaweed** : is a soil conditioner, supplying trace elements. It is also a good compost heap ingredient as it encourages bacterial growth.

* **Leaf mould** : benefits structure but adds little to fertility.

* **Mushroom compost** : is a good soil conditioner.

* **Crop rotation** : allows one to make the best use of the soil's fertility.

* **Green manure** : includes any plant material that is added undecomposed (or green) to the soil.

  Leguminous green manures add nitrogen (N) to the soil and thus help maintain and improve soil structure and fertility. Plants such as beans, lucerne, cowpeas and clover fix N in the soil. These plants when fed to animals will also return high amounts of N through the manure.

* **Urine** : is a valuable compost activator, but should first be diluted with water.

* **Cover crops** : shade and aerate the soil and reduce erosion. They include almost any plant that is grown on unprotected soil, such as green manure, wild spinach, sweet potatoes and 'weeds'.

* **Mulching** : protects the soil from the desiccating effects of the sun. It traps rain and condensation and prevents loss of moisture from the soil. It will reduce erosion and suppress the majority of weeds. The most often used mulch is a thick layer of straw, but stones, and even tree bark can serve the same function.

* **Soil cultivation techniques**: may sometimes be necessary and aim to maintain soil structure and allow the soil to have a green cover for as long as is possible. Such techniques include hoeing, shallow turning (up to 10 centimetres), and deep loosening or aeration (10 – 30 centimetres).

  If cultivations are required they should only be done in dry conditions. If the soil is wet, compact layers will be created which will in turn severely limit plant growth. Compaction can be further avoided by not walking on wet soils. Above all, do not destroy what structure you already have and ensure that soil erosion will not occur as a result of these techniques

CHEMICAL FERTILISERS

It is generally realized that artificial fertilizers do not benefit the soil as much as organic manures. It is not so widely know that they can have a number of harmful effects:

* Growing plants tend to take up too much nitrate, leading to soft sappy growth which pests love.

* Essential elements can be 'locked up' so they are not available to the plants. This effectively reduces soil fertility, which can cause plants to be more susceptible to disease and pest attack

* The two points above can also mean that the nutritional value of crops is reduced.

* The activity of many soil organisms is inhibited, so shutting off a natural source of plant foods.

* The soil tends to become acid so earthworms move out.

Reference: "Step by Step Organic Gardening: What is Organic Gardening?" PUBLISHED BY Henry Doubleday Research Association.

TRENCHING FOR FOOD PRODUCTION

Much has been written about the trench method of gardening, and it undoubtedly has great potential for increasing food production under certain conditions. However, trenches should not be considered as the only method to be used for growing food – it is important to understand why trenches are used, and to then decide whether or not they are required.

The first point to understand is that there are different types of trench; the deep trench, the mock trench and the furrow trench. Most people, when considering trenches, think of the deep trench. This is a trench one metre deep, two metres wide and of variable length. The mock trench is, by comparison, only 60 cm deep, and the furrow trench only 30 cm deep. The amount of effort required to set up trenches therefore varies depending on the type of trench. It should be emphasized that the digging of a deep trench is hard work! The long term benefits are, however, that once dug, the trench remains effective for many years.

Given that digging a deep trench is such hard work, it makes sense to ask: "When should a deep trench be dug?" Trenches are suitable where conditions are very dry, or where the soil is very poor. There is little merit in digging a trench in good fertile soil, where rainfall is reliable. A deep trench holds water and provides nutrients for plant growth, and thus helps to overcome problems of poor soil and drought.

The second point to note is that, having dug a deep trench, it is not simply a case of: "Plant it and forget it". The principles of crop rotation should be followed, as well as other useful techniques such as mulching to conserve water. It is also advisable to "top up" the fertility of the trench through regular applications of compost or manure.

If, after considering the circumstances, it is felt that a deep trench is not necessary, then perhaps a mock or furrow trench would suffice. The furrow trench, in particular, has all the advantages of a deep trench (except permanence over several years), yet is much easier to dig. The basic principles apply to trenches of any depth.

If it is decided that trenches are not required at all, then there are other very useful and necessary soil care techniques that should be used to maintain soil fertility.

HOW TO PREPARE A DEEP TRENCH

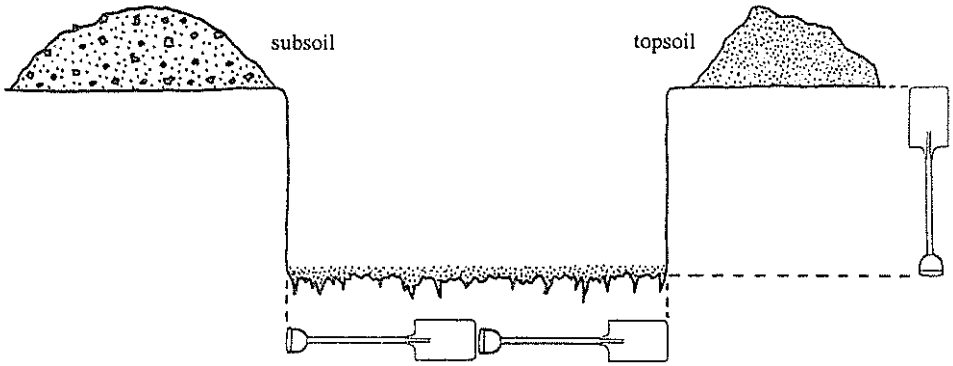
1. If the trench is to be prepared on a slope, the construction of terraces and swales will first be necessary.

2. A site in full sun should be chosen. Most vegetables require full sun. If the deep trench is to be prepared on a slope, a north-facing slope is best.

3. The trench should be one meter deep. The width may vary, but should allow access to the middle of the planting area from both sides. In this way, one can weed, tend the plants, and harvest without having to step onto the bed. Experience has shown that two meters is a suitable width. The length will depend upon how much space is available, and upon one's energy!

4. Prepare the trench as follows:

   (a) Dig a trench one meter deep, taking care to keep the topsoil and the subsoil separate.
   (b) Loosen the soil at the bottom of the trench with a spade, fork, hoe or crowbar.
   (c) Start with a layer 7,5 cm deep of topsoil.
   (d) Next, a layer 30 cm deep of grass and/or any other organic matter[1].
   (e) Another layer 7,5 cm deep, this time of subsoil.
   (f) Another layer 30 cm deep of grass and/or any other organic matter.
   (g) A layer 7,5 cm deep of subsoil.
   (h) A layer 30 cm deep of grass and/or any other organic matter.
   (i) A layer up to depth of 30 cm of mainly topsoil, to fill the remaining space and to stand approximately 15 to 20 cm above the surface. This raised portion allows for settling of the trench contents.



If water is readily available, each layer can be watered before the next layer is added.

Any soil which remains from digging the trench can be spread onto other plots.

Some references recommend that the trench be allowed to settle for a month or more before vegetables are planted. There may also be an initial build-up of heat as the organic matter starts to decompose. However, legumes (beans and pea family) may be planted immediately as they appear able to tolerate the conditions in a newly-prepared trench. It may also help if a little compost or well-rotted manure is dug into the top few centimeters of the trench. Once the plants have reached a height of a few centimeters, the bed should be mulched.

After the first crop of legumes, we recommend that crops be rotated.

[1] The term "organic matter" refers to any vegetable matter either living or dead, which, when decomposed, will increase soil fertility. Examples are grass, vegetable peelings and leaves. Not all leaves are acceptable, however: do not use pine needles or leaves with a strong smell of resin, eg. Eucalyptus. It is also better if there are not too many large pieces of organic matter, such as maize stalks or branches, as these can create large empty "pockets: which will later cause the trench to subside. The only material of animal origin that could be added is manure. Do not add any rubbish such as glass, plastic or tins, to your trench.

MAKING COMPOST

Nature maintains the fertility of the soil by returning to it all dead animal and plant material. This is decomposed to humus naturally on the surface by bacteria and other microbiological activity assisted by worms, slugs, snails, insects and birds. This natural process can be sped up through the construction of compost heaps.

Soil with compost in it makes available most of a plant's nutritional requirements. Compost encourages microbiological activity, improves the water-holding capacity of the soil and improves the soil structure. It feeds and replenishes the soil and will produce healthy and relatively disease-free crops.

The main agent involved in composting is a huge population of micro-organisms living in a moist, warm and aerated environment. They do all the work in decomposing the material in a compost heap, and must be provided with the best possible living conditions.

HOW TO BUILD THE HEAP

Virtually all plant material will decompose in a compost heap, but if there is insufficient organic material for the building of a compost heap in one operation, then it is a good idea to store this material in a dry place. Once enough waste has been collected, then the construction of the heap can begin.

- Arrange the bottom and central air supplies through the use of coarse material as the first layer and by placing poles upright to act as air vents within the heap.
- Bring together all organic garden and kitchen waste. Break up any tough stems and large pieces of material and mix this together until the composition is reasonably uniform.
- Build up the heap using layers of this material. It is a good idea to moisten each layer during building.
- Manure is a source of nitrogen and can be mixed in with the organic material or can be added in thin layers. This will speed up the composting process.
- Finally put on a heat-retaining layer of straw, soil or old sacking, for example.

For a successful compost pile (rapid micro-biological activity) the following factors must be maintained:

Moisture

The heap should always be damp, but too much moisture destroys the structure necessary for aeration. In order to retain maximum moisture the heap should preferably be constructed in the shade.

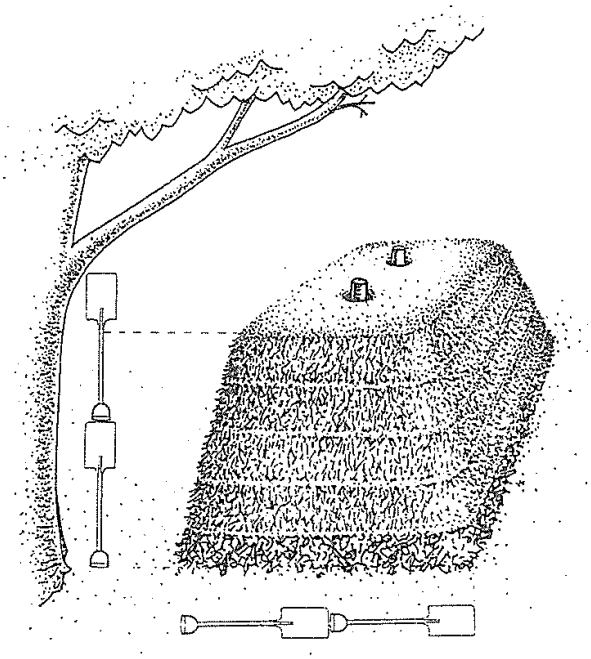
Warmth

A certain amount of heat has to be created for a quick and effective decomposition and for the destruction of any weed seeds that might be present. For weed-free compost the heap must be turned once after 2 or 3 weeks. This is also important for aeration.

Aeration

Sufficient air for the micro-organisms to work in must be supplied mainly from underneath the heap through the placing of twigs, maize stalks, etc as the bottom layer.

Well-made compost is dark brown or grey and has the sweet smell of good clean earth as its main characteristic. It should only be used at this stage and can now be dug into the top few centimeters of the soil.



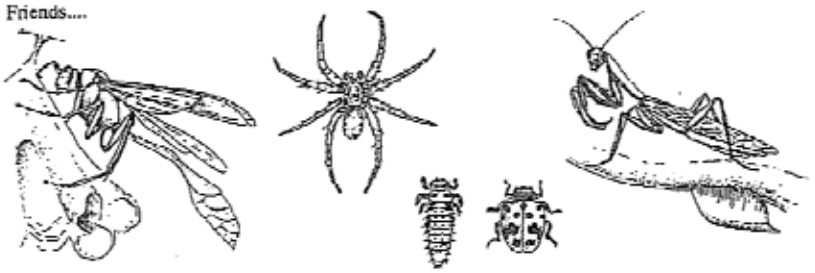
PEST AND DISEASE MANAGEMENT

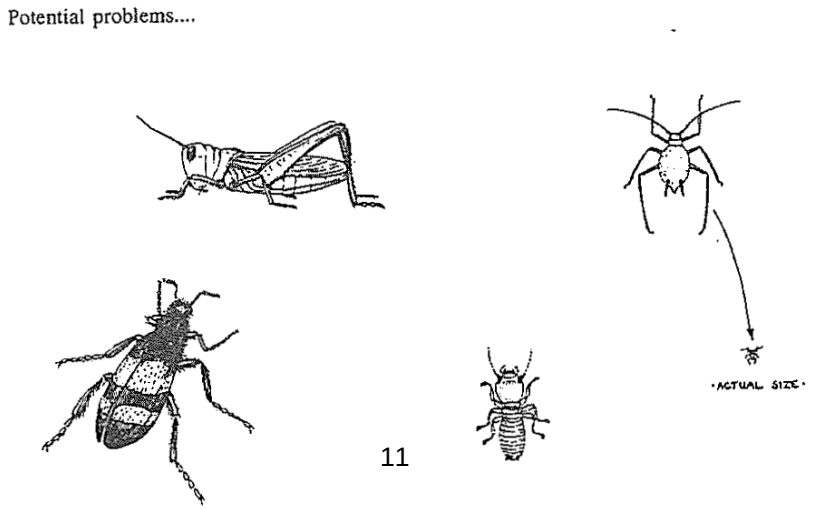
To ensure that pests and diseases never become a problem in your garden, your plants must be strong and healthy. The first line of attack is thus to create a healthy soil, which will produce strong vigorous plant growth.

A garden is not a natural environment but the more diverse it is, the more likely it is to attract the wide range of creatures that will maintain a balance. Something that you will notice about natural ecosystems, such as a grassland, is balance and stability. Rarely is any one species eliminated and seldom if ever does any species multiply to pest proportions.

It is essential to get away from the way of thinking the sees every insect as a pest to be killed. If a crop is attacked you should recognize that this is a symptom of imbalance in the local environment, and that some aspect of your gardening technique is probably responsible.

If we attack a pest with chemicals these may have a negative effect on the food supply or habitat of other forms of wildlife among whom we have many more friends than foes.





PEST CONTROL THE ORGANIC WAY …

1. Ensure that the right plant is grown in the right place. Plants that are forced to grow in situations that don't suit them are unlikely to thrive.

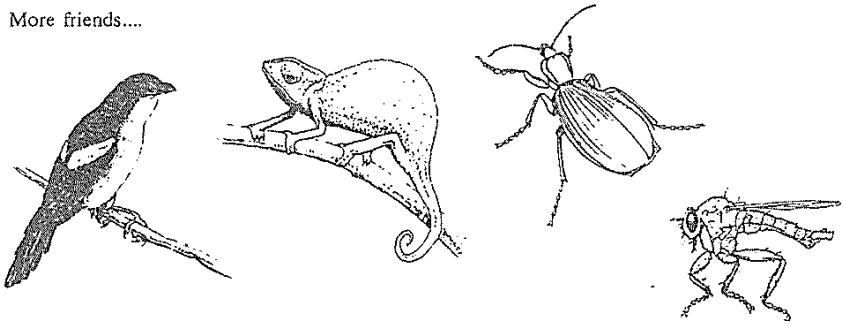
2. Encourage natural controls through providing a wide range of habitats and food plants in the garden that will attract a wide range of creatures.

   - A small pond will provide a home for frogs and toads. Bats may also be attracted to feed on the insects the pond will support.

   - Indigenous trees and hedges support a far greater range of wildlife than exotic plants do.

   - A small patch of long grass, or a weedy area will provide protective cover for chameleons, lizards, frogs, toads and ground beetles.

3. Decide whether there really is a problem. If there is, learn all you can about it so that you can devise ways of avoiding the problem. This also means that you don't waste time trying to control the wrong creature or kill beneficial insects.



……**AND WEED CONTROL**

Weeds are all part of a good mixed environment and are, after all, only 'weeds; if they compete with drops for space, water or sunlight. If 'weeds' are growing on otherwise bare soil then they are shading it from direct sunlight and preventing excess loss of moisture through evaporation. Weeds also protect the soil from the eroding forces of wind and rain.

If weeds are to be controlled then there are a variety of methods than can be used.

- Mulching, with straw, bark, newspaper, stones (or even plastic).
- Growing green manures such as clover or lucern, and covercrops such as wild spinach or sweet potatoes.
- Growing vegetables at close spacings

DESIGNING YOUR GARDEN

This planning stage is critical for a healthy and productive garden. One many sites crops should only be sown once the following conditions have been met: a hedgerow or fence has been erected, soil rehabilitated by mulching or composting, erosion controlled, and a water supply ensured. Any soil shaping for terraces, swales, paths or dams also needs to be completed before planting begins.

When designing your garden for the most beneficial combinations of plants you need to know about, and use, the concept of guilds. A guild is an harmonious assembly of species clustered around a plant (or animal) or group of plants. This assembly sets up beneficial relationships to assist the plant or group of plants to remain healthy and productive.

The reasons for growing plants in association with other selected plants are numerous, and include all of the following:

- To reduce root competition from invasive grasses. Most fruit trees thrive in herbal ground covers, not grasses.

- To assist in pest control by:

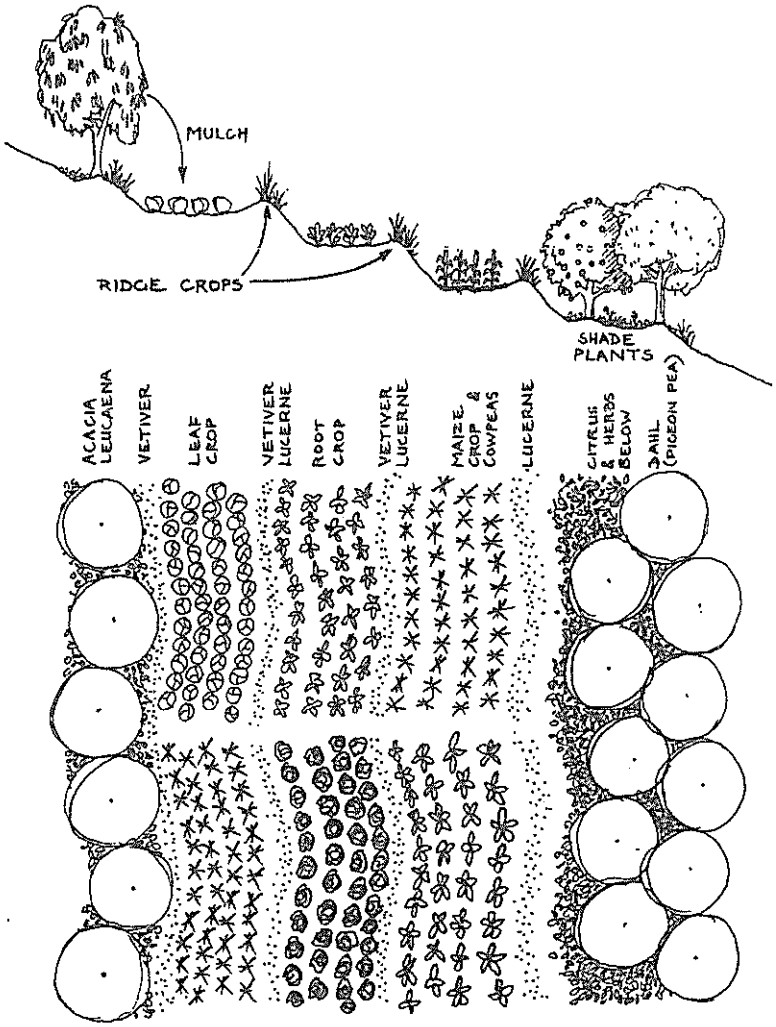
  … killing root parasites, eg. **Tagetes** marigolds and khaki bos which "fumigate" soils against grasses and nematodes.

  … hosting predators, as almost all small-flowered plants such as dill, fennel, carrot and coriander host robber-flies and predatory wasps.

  … deterring insects, eg. nasturtium roots secrete root chemicals which deter whitefly from tomatoes. There are, in fact, many herbs which can be grown with other crops as companion plants to repel insects. Examples include the growing of lavender, sage and thyme with cabbages to repel cabbage fly. Thyme also repels moths and snails.
  Geraniums help keep aphids at bay. There are numerous other examples.

- To provide free nutrients : legumes fix nitrogen in the soil via root associates, stimulate soil bacteria, and benefit associated trees and crops. Clovers and trees such as **Acacia, Leucaena** and **Dahl** all assist fruit trees and other food producing plants. Many can be trimmed to give rich mulch below trees or between crop rows.

- To provide shelter from frost, sunburn, or the drying effects of wind. Many hardy windbreak species grown within the crop or as an edge windbreak exclude frost, reduce salty or hot winds, provide mulch, and moderate the environment towards protecting our selected species. Avocado and citrus trees as well as various other crops require in-crop shade and shelter which can be provided by leguminous trees.



A side view and a top view of a small garden producing abundant fruit, vegetables and her on sloping ground.

WHAT, WHERE AND HOW TO PLANT?

A cabbage is not just a cabbage. There are different varieties of cabbages, carrots and most other vegetables. Varieties are adapted to specific growing conditions, such as temperature and day length. When buying vegetable seed choose the varieties that are most suited to the growing conditions experienced in your part of the country during that season.

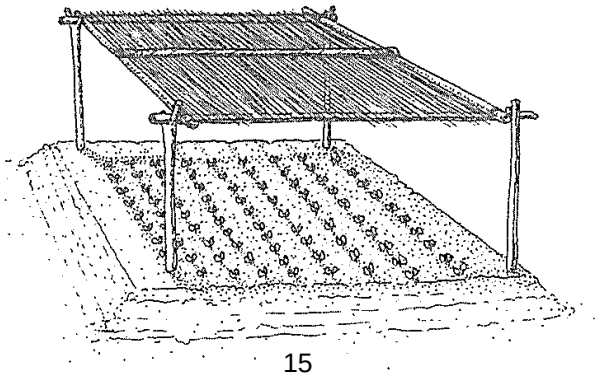
The vegetables listed in the table occur as many different varieties, some of which will produce abundantly when planted during the following months.

Sowing seed

Before you sow seed, ensure a fine tilth by breaking up the lumps in the soil and remove stones and gross roots. Compost should be dug into the top 10 or more centimeters of your garden plot or seedbed. Put the seed in holes or furrows about five times as deep as the size of the seed and cover them with fine sifted compost or kraal manure. Cover the garden plot or seedbed with a mulch and water gently every day. Once the seedlings have pushed through the soil, make a space in the mulch for the young plants to grow through. The seedlings must be thinned out if there is a chance that their roots might intertwine.

Making a seedbed

A seedbed can be as big or as small as you like but needs to be no longer than 1 metre by 1 metre. All leaf crops and fruit crops should be planted into seedbeds and after about four weeks the small plants can be transplanted into a garden plot. To ensure easy removal of the seedlings the seedbed should be raised and well composted. During summer it is often a good idea to shade the seedbed with a roof of grass or orange-pocket sacking.



Vegetables to be sown in seed beds

Vegetable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Brinjal								*	*	*	*	
Cabbage	*	*	*	*	*	*	*	*	*	*	*	*
Leeks	*	*	*	*				*	*	*	*	*
Lettuce	*	*	*	*	*	*	*	*	*	*	*	*
Onions			*	*								
Peppers								*	*	*	*	
SwissChard	*	*	*	*				*	*	*	*	*
Tomatoes	*	*	*					*	*			

Vegetables to be sown directly.

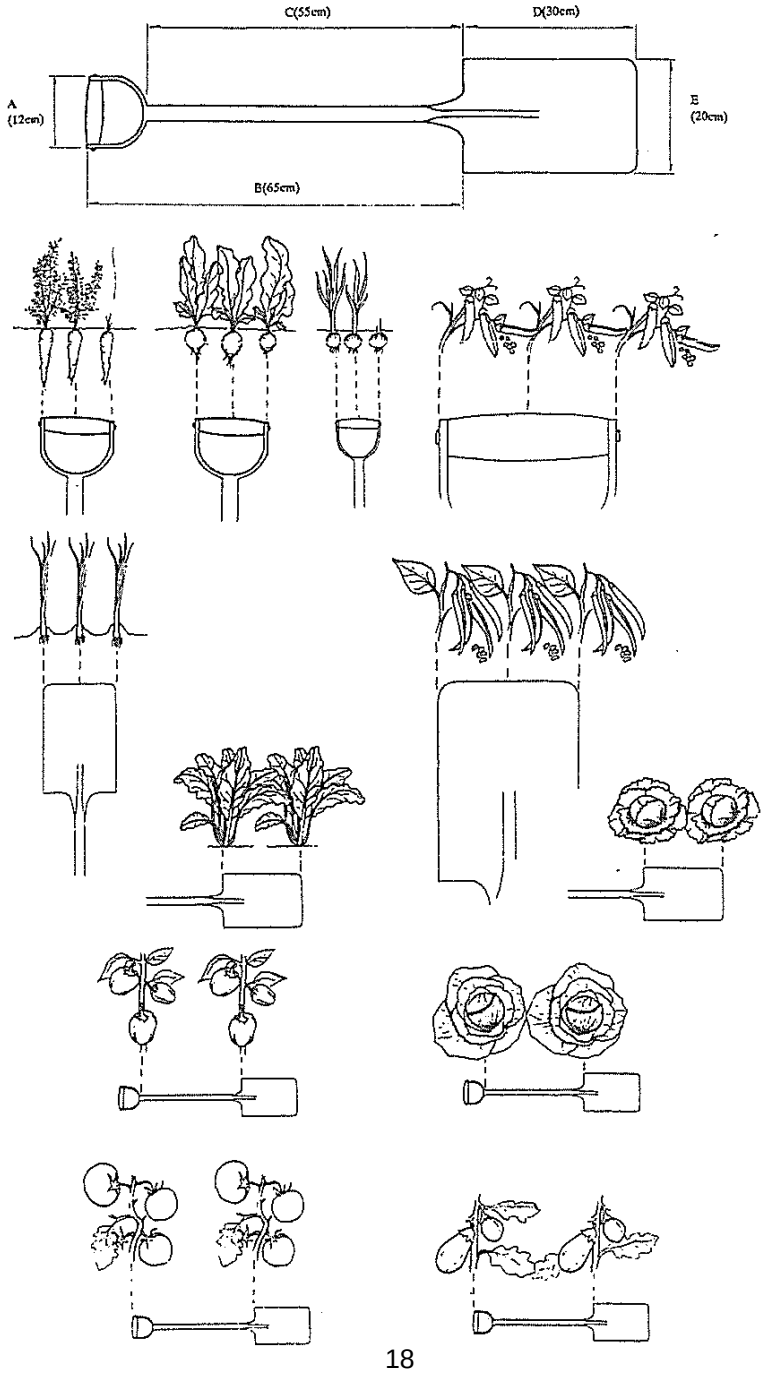
Vegetable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beans,broad				*	*							
Bush	*	*						*	*	*	*	*
Lima										*	*	
Pole	*								*	*	*	*
Beetroot	*	*	*	*				*	*	*	*	*
Carrot	*	*	*	*				*	*	*	*	*
Cucumber									*	*	*	*
Maize	*							*	*	*	*	*
Peas		*	*	*	*							
Potatoes	*	*						*	*	*	*	*
Pumpkins									*	*	*	*
Radish	*	*	*	*	*			*	*	*	*	*
Turnips		*	*	*				*	*			

VEGETABLE SPACING

For some of the basic vegetables a guide to the spacing within a row is given. Closer spacings of many of these vegetables will result in bigger yields. Closer spacings, however, require a high soil fertility to maintain an increase in the number of healthy plants.

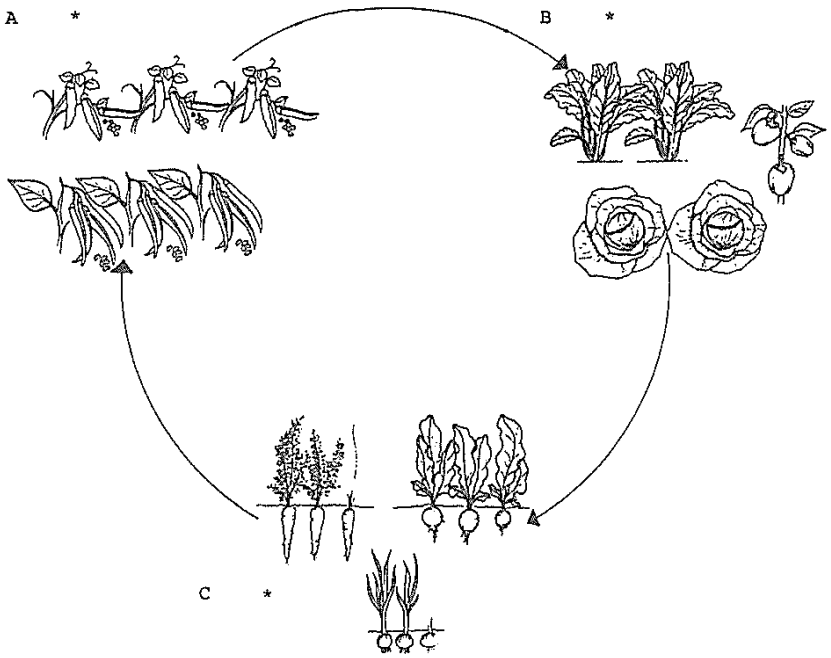
Spacing between rows should allow you to walk between plants without crops being damaged. It is important to remember that the space between rows as well as within rows should also be balanced against the size of the crop when ready for harvesting.

Vegetable	Within-row	Spade measurement
Broad bean	20 – 30 cm	D
Bush bean	7.5 – 10 cm	E/2
Beetroot	5 – 10 cm	A/2
Broccoli	30 – 60 cm	C
Cabbage	30 – 60 cm	C
Carrot	2.5 – 7.7 cm	A/2
Cauliflower	35 – 60 cm	C
Egg Plant/ brinjal	45 – 75 cm	B
Leek	7.5 – 15 cm	E/2
Lettuce	25 – 40 cm	D
Onion	2.5 – 10 cm	A/2
Pea	2.5 – 10 cm	A/2
Pepper	30 – 60 cm	C
Potato	30 – 45 cm	D
Squash – bush	45 – 120 cm	B
- trailing	90 – 250 cm	B + D
Swiss Chard	20 – 40 cm	D
Tomato	60 – 90 cm	B
Turnip	5 – 10 cm	A/2


C(55cm)
D(30cm)
A
(12cm)
E
(20cm)
B(65cm)

CROP ROTATION

If one crop is grown in the same place year after year, some pests and diseases will build up in the soil. Also, different crops take different nutrients from the soil, while some add nutrients. By rotating our crops, we can break the cycle of disease while maintaining the soil's nutrient balance.



Examples of these plant groups are as follows:

A	*	Legumes	:	beans and peas
	*	Grain	:	maize
B	*	Leaf Crops	:	lettuce, swiss chard, cabbage
	*	Fruit Crops	:	brinjals, tomatoes, peppers
C	*	Root Crops	:	beetroot, carrots, leeks, onions, potatoes, radish, turnips

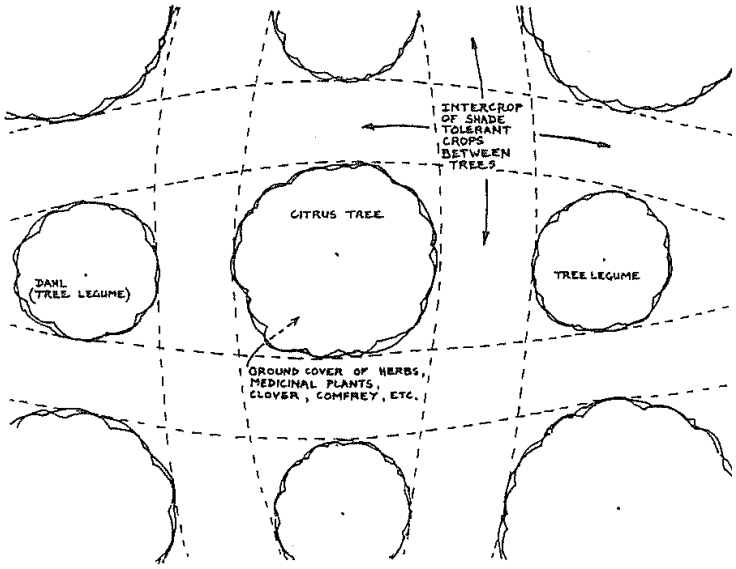
PLANTING AND GROWING TREES

Trees provide oxygen to breathe, and absorb air pollutants. They settle dust and smog particles and reduce reflected heat from buildings and bare ground. They provide shade and release moisture and can thus help to reduce summer temperatures.

Trees can be planted almost anywhere, but time should be taken to choose a spot that will provide the most benefits to your garden. Fruit trees can be planted, together with leguminous trees and other useful plants, in a small orchard. (See diagram below). If this is not possible then trees should be planted individually or as a windbreak.

Trees are an integral component of a healthy garden and help to maintain the balance in nature. Our quality of life is improved and our home environments are kept healthy and beautiful.

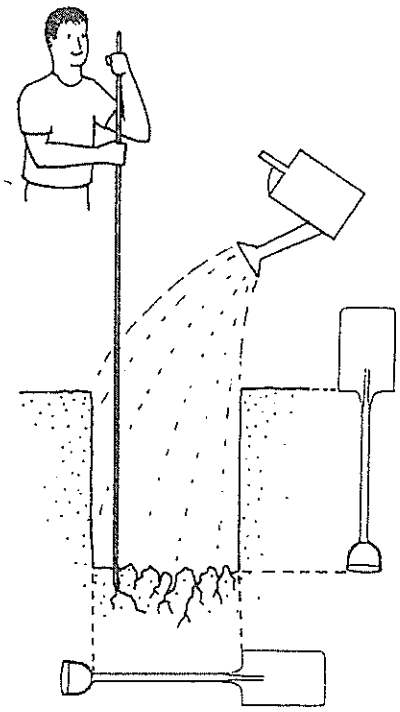
You can grow trees from seed if they are placed in a mixture of 2/3 topsoil and 1/3 river sand in a container with drainage holes in the bottom (an old milk carton cut in half is ideal). Seedlings require regular watering and some shade during the hottest hours of the day.

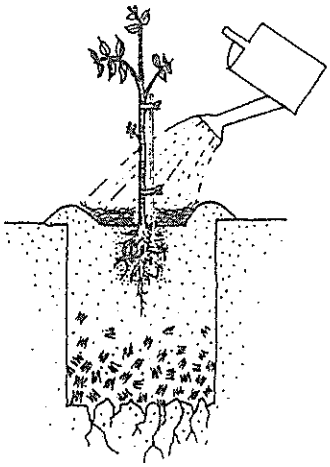


A guild assembly for a citrus orchard.

TO PLANT A TREE

- Choose a suitable place for your tree to grow.
- Dig a hole as large as possible – not smaller than 50 cm square and 60 cm deep.
- Break up the soil in the bottom of the hole and wet the sides and the bottom of the hole.
- Mix about 6 spades full of compost or well-rotted manure with the soil at the bottom of the hole.
- Plant the tree and then fill the hole (with as much topsoil as possible).
- Tie the tree loosely to a stake.
- Place a thick mulch of compost, newspaper and/or grass around the young tree making certain that it does not lie against the stem.
- Water well. If your tree will not receive much water during the dry months, then it is best to plant it during spring and summer.





A USEFUL PLANT LIST

All of the following plants have numerous uses and all of them will improve the ability of your land to produce abundant food. You will be able to grow most of them in your garden. All of the plants listed below are perennials unless otherwise stated.

Anatree, Acacia albida: A nitrogen-fixing tree. The pods can be eaten by cattle, and crops can be grown under it.

African Marigold, Khakibos, Tagetes spp.: An annual flowering plant that is a general insect repellent. It is especially good at repelling moths and fleas indoors, and pumpkin fly outdoors.

Comfrey, Symphytum spp.: A leaf crop that is more than just a vegetable. It has many medicinal uses and is a useful component of compost.

Cowpea, Vignea sinensis: An annual nitrogen-fixing ground cover. It protects the soil and produces abundant seeds that are a rich source of protein for human consumption.

Vetiver grass, Vetiveria zizanioides: A tall, coarse drought-tolerant grass that is non-invasive. When grown in hedges it controls sheet erosion, and allows run-off to soak into the soil.

Honey locust, Gleditsia triacanthos: A fast-growing, nitrogen-fixing tree, well suited to cool, dry zones. They produce abundant seeds relished by livestock, and make an excellent meal or flour.

Lavendar, Lavendula spica: A medicinal herb that is said to relieve headaches, sunstroke, stress, and over-excitement. It has insect repelling properties indoors and helps to repel cabbage fly when grown with cabbages.

Leucaena, Leucaena spp.: These are nitrogen- fixing trees of varying heights that can be coppiced. They produce abundant seeds, which are eaten by cattle and goats. The leaves can be eaten by chickens, and can be used for green manuring or making compost.

Lucerne, Medicago sativa: A nitrogen-fixing multi-stemmed herb which is a good fodder crop. It is rich in vitamins A, C, K and E, and untreated seeds can be sprouted for use in salads.

Pigeon pea, Dahl, Cajanus cajan: A small nitrogen-fixing tree that can be used as a wind break when planted closely. The seeds are a rich source of protein for human consumption.

Tagaste, Chamaecytisus proliferus: A small nitrogen-fixing tree that produces heavy yields of valuable livestock fodder. The leafy branches can be cut and fed directly.

GLOSSARY

Annual	A plant that completes its life cycle within one year's time and then dies.
Guild	A species assembly of plants and/or animals of benefit to each other or to selected crop species. Guilds need to be placed in sensible patterns for management and to effect the benefits of interaction.
Organic Gardening	Growing food without the use of artificial fertilizers and chemical pesticides while using methods, techniques and products which work, as far as possible, with nature.
Permaculture	(Permanent agriculture) is the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability and resilience of natural ecosystems. It is the harmonious integration of landscapes and people.
Perennial	A plant that lives from year to year.
Swale	A long, level excavation which can vary from a small ridge to an excavated hollow intended to intercept overland water flow, to hold it for a few hours or days, and to let it infiltrate into the soil and plant root systems.

HELPFUL ORGANISATIONS

All of the following are involved in sustainable food production:

Abalimi Bezekhaya
37a Somerset Road
Cape Town
8001

Africa Tree Centre
Box 90
Plessislaer
Natal
4500

Fambidzanai Training Centre
P O Box 8515
Harare
Zimbabwe

Organic Soil Association of South Africa
Box 2966
Cape Town
8000

Permaculture Association of South Africa
Box 68929
Bryanston
2021

The Valley Trust
P O Box 33
Bothas Hill
3660

REFERENCES AND SUGGESTED READING

Mollison, B C (1990) Permaculture, A Pracitical Guide for a Sustainable Future. Island Press, Washington.

Hemy, C (1988) Growing Vegetables in South Africa. Southern Book Publishers (Pty) Ltd., Johannesburg.

Henry Doubleday Research Association (1987) Step by Step Organic Gardening.

Roberts, m (1986) Margaret Roberts' Book of Herbs. Book Production, Johannesburg.

Seymour, J (1976) Complete Book of Selfsufficiency. Faber and Faber, London.

N.B: Some of these books were written for gardeners in the Northern hemisphere, and others do not necessarily promote organic principals. However, all have valuable contents of one sort or another.