



Food and Medicine Gardens

Permaculture for Primary Health Care

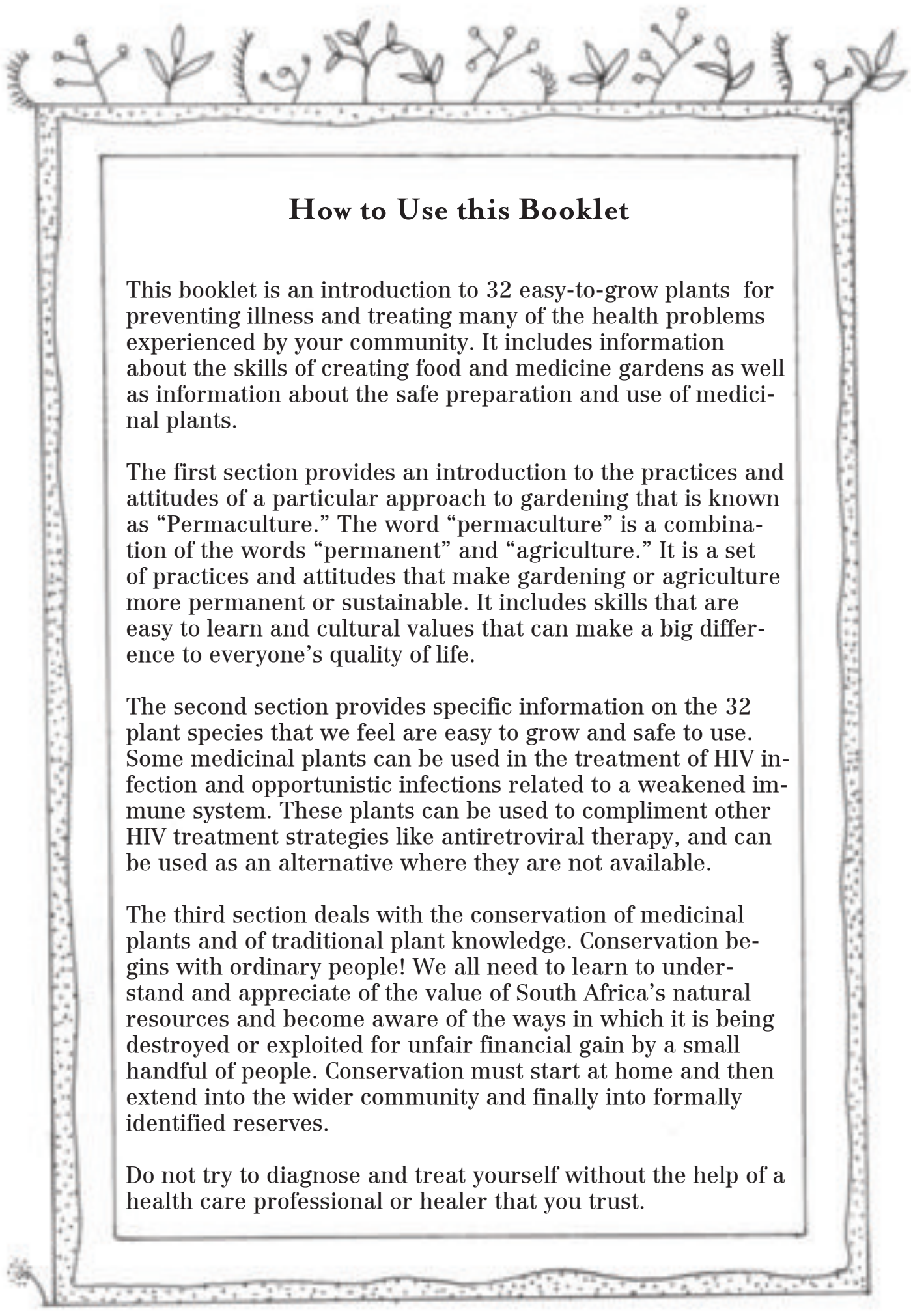


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How to Use this Booklet

This booklet is an introduction to 32 easy-to-grow plants for preventing illness and treating many of the health problems experienced by your community. It includes information about the skills of creating food and medicine gardens as well as information about the safe preparation and use of medicinal plants.

The first section provides an introduction to the practices and attitudes of a particular approach to gardening that is known as “Permaculture.” The word “permaculture” is a combination of the words “permanent” and “agriculture.” It is a set of practices and attitudes that make gardening or agriculture more permanent or sustainable. It includes skills that are easy to learn and cultural values that can make a big difference to everyone’s quality of life.

The second section provides specific information on the 32 plant species that we feel are easy to grow and safe to use. Some medicinal plants can be used in the treatment of HIV infection and opportunistic infections related to a weakened immune system. These plants can be used to compliment other HIV treatment strategies like antiretroviral therapy, and can be used as an alternative where they are not available.

The third section deals with the conservation of medicinal plants and of traditional plant knowledge. Conservation begins with ordinary people! We all need to learn to understand and appreciate of the value of South Africa’s natural resources and become aware of the ways in which it is being destroyed or exploited for unfair financial gain by a small handful of people. Conservation must start at home and then extend into the wider community and finally into formally identified reserves.

Do not try to diagnose and treat yourself without the help of a health care professional or healer that you trust.

“The time has come for Africa
to take full responsibility for her woes
and use the immense collective wisdom it possesses
to make a reality of the ideal of
the African renaissance,
whose time has come.”

N e l s o n M a n d e l a



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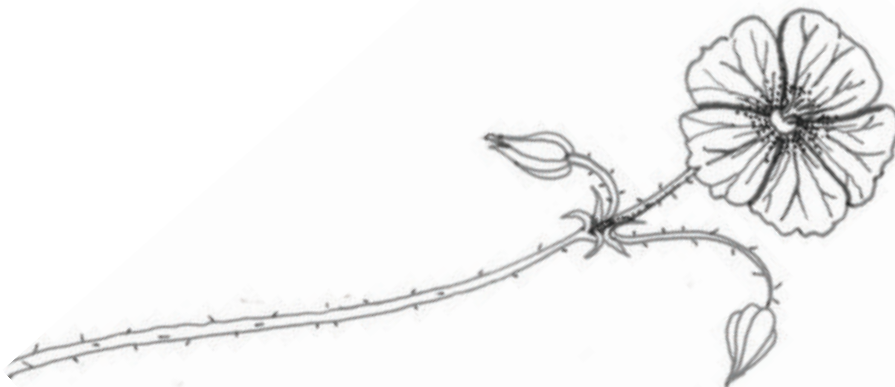
Growing food and medicine gardens - an introduction

A food and medicine garden is an easy first step to improving the health and lifestyle of a community. Creating a food and medicine garden in your community can:

- empower people and promote food security by allowing people to grow as much food as possible;
- provide nutritious food, like the fresh fruit and vegetables that build healthy immune systems, prevent disease and improve the health of those already living with diseases like TB and HIV;
- empower people to grow their own medicine;
- build community pride and give communities a sense of control and a sense of being able to take positive action;
- affirm traditional eating habits and indigenous knowledge about plants;
- challenge the idea of health as something that always costs you money and facilitate people to take control of their own health so that they rely less on expensive pills and capsules.

Creating a garden can be done in a way that is not expensive and does not rely on outsiders to bring in extra resources. It can be done by using the everyday resources we already have around us, by learning to conserve the natural resources we have and by recycling and reusing waste materials. There is a way of farming, gardening and living that teaches all this and more. It is known as Permaculture.

Permaculture regards the relationships between all these resources as the relationships of one whole (or “integrated”) community and tries to encourage the most productive relationships, especially ones that produce more energy than they use.



In Permaculture we try to recycle all waste products because many waste products carry useful nutrients for the garden, or energy that can still be used by humans, or physical materials that can be used to make a new product.

To do all this effectively Permaculture values the skill of observation. It is often said that 80% of the effort in Permaculture is about observation and only 20% is about action. Permaculture also tries to observe and copy the best processes in nature so that it can create the most stable environments (or “ecosystems”) that are as self-sustaining (self-managing) as possible and can recover quickly from damage and loss.

Permaculture encourages us to think more holistically. This means two important things:

- We need to consider all the participants (people, plants, animals) and resources in an environment and the way they relate to each other.
- We need to learn to spend time imagining what the consequences of our actions will be for the future of a particular environment and particular community.

Permaculture does all this without the use of too many outside resources, expensive technology, unaffordable seed, artificial fertilizers and poisonous pesticides. It also tries to avoid the kind of storing of food and transport to markets that is expensive and makes the food less nutritious.

**Permaculture is
the thoughtful design
of a system of farming and gardening
that uses and combines all available resources,
including plants,
animals,
soil resources,
water resources,
landscape,
climate,
human resources,
buildings,
technology,
waste materials
and local knowledge.**

In summary, the practice of Permaculture focuses on designs that:

- spend as little energy as possible;
- look as far into the future as possible and think of the consequence of every act;
- use all available resources in the most productive relationships possible;
- use as many different plant and animal species as possible;
- grow food where the people live;
- recognize the environment as a complex set of living relationships and try to include all the relationships within an environment; and
- copy the processes of nature to allow an environment to sustain itself naturally.

Examples of Permaculture techniques include:

- learning to observe the natural processes like water flow, wind direction, sun-light distribution, the effects of invasive species, etc.;
- learning to observe the effects of humans on the environment;
- learning to identify useful resources (especially those people regard as waste);
- making an accurate list (audit) of all available resources;
- carefully designing gardens to make the best use of the landscape;
- finding clever ways to catch and “harvest” rain water and waste water;
- planting herbs that keep away unwanted pests;
- using mulch (layers of dead plant material) to keep moisture in the ground;
- maintaining levels of useful nitrogen in the soil by planting nitrogen using plants together with nitrogen fixing plants;
- using leftovers of vegetables and fruit to create compost;
- collecting seed for future planting (propagation); and
- using waste products, like plastic containers, to create useful gardening tools.

Design

A lot of Permaculture design is common sense. For example: A garden should be designed to be energy efficient by placing different elements, each with their own special function, in areas that are defined by how often we need to visit them. Areas with elements that need to be visited everyday are placed near the home, while areas with elements that are visited less often are placed further away.

Zone 0: The home consumes the most time and effort.

Zone 1: Home Garden produces most of the food for domestic use. Small fruit trees and animals are also situated here.

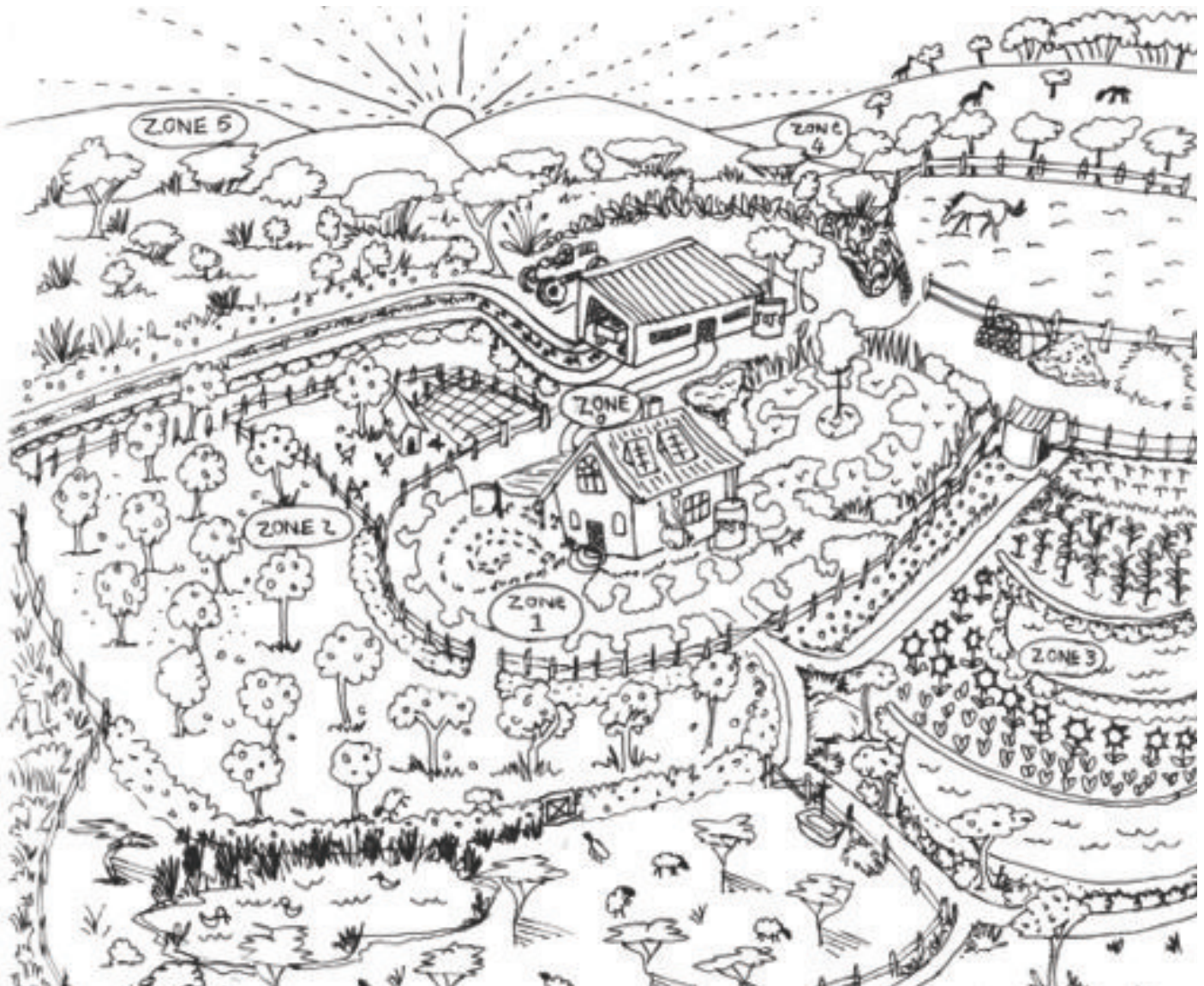
Zone 2: Orchards, poultry, main crop beds, bees and other less intensive elements.

Zone 3: Field crops, large dams, tree systems that need less attention.

Zone 4: Timber lots, pastures and grazing areas.

Zone 5: Wilderness Area – our best teacher

An example of zone gardening



Base the development of each zone on clear and measurable goals - environmental, aesthetic (appearance and beauty), social and economic roles).

A Permaculture food and medicine garden has its greatest value when it is designed and developed with the intention of creating compassion, understanding and cooperation, using the Earth's natural wealth to the benefit of all its people. Generous intent lies at the heart of design.

Here are some principles of sustainable garden design:

Everything in relationship: The needs of one element are easily met by the products of another element. For example, an onion planted with cabbage will repel pests that eat cabbages. Beans planted with maize will help to restore nitrogen to the soil which maize takes out.

Diversity rules: Ecosystems that survive are usually ecosystems that contain a lot of diversity. Produce as many different species as possible. Use as many diverse production processes as possible. Also, choose and use plants for as many diverse uses as possible, including nutrition, medicine, beauty, as well as their spiritual and economic value. Diversity rules!

Everything must have a purpose: Land must not be wasted and every corner of the site and vertical space must be used. All elements in the design should have at least 3 uses.

Work with nature not against it: In nature, dead plants return to the soil and contribute to making it nutritious for other plants. After you harvest plants put back all the parts you don't use. Stop the unnecessary burning of grass and paper. Rather put these back into the soil. Try to use locally indigenous species, or naturalized species that are known to be beneficial. Use plants that suit local weather conditions.

Cooperation not competition: Make use of the natural characteristics of the plants and animals in your garden to maintain the natural order of things. Design must go beyond the boundaries of your beds and the fences that surround your gardens. You must think about the kind of relationship the surrounding environment and community will have with your garden. Cooperation or competition? This will influence your final design.

Design for the people: People are the users of gardens. Design must be all about what people need as well as their beliefs, tastes and feelings. Your design should assist people to become self-reliant and put the community in control of its health and wealth. The approach of Permaculture recognises the strong link between poverty and the environment. It suggests that the conservation of our natural wealth supports the improvement of human health and local economies.

Work with those who want to work: Gardens provide many opportunities for people. One of these is the opportunity for meaningful work. An important part of the design process is finding people who are motivated to spend their time and energy on working in the garden – and are motivated to work together with others towards shared goals.

Work where it counts: Make a list of priorities and spend your time working where it is most important.

The greatest amount of energy gain for the least amount of energy spent: It is better to spend a lot of time thinking than a lot of time working fruitlessly.

Take the long-view: Plan for long-term sustainability.

See solutions, not problems: Problems are not obstacles but opportunities to learn and grow our understanding.

Recycle, reuse and reduce: Use everything at your disposal and recycle all wastes



Some questions to ask before planning your food and medicine garden

It is very important to plan your garden before you begin planting or keeping live-stock. Here are some useful questions you can ask yourself when planning your garden.

People:

- Who are the stakeholders of the project and what is their influence?
- What quality of life do you want to have in future?
- What is the historical background of the area?
- How will you include existing elements with the new development?
- What are major health and social issues in the community?
- How can this garden address these issues?
- What sanitary systems are available and how do they link to the planned garden?

Plants:

- What plant species are growing on the site?
- What are the uses of the plants growing on the site?
- Where can you plant fruit trees and in what pattern?
- What vegetable and herb bed design do you need?
- When should you start planting?
- Where and how do you get seedlings for now and the future?
- What medicinal plants, herbs and flowers can you grow for your community and for protecting the garden against pests?
- How are you going to remove unwanted elements in the project site?

Elements:

- What type of landscape do you want to see in 1 year ... 3 years ... 10 years ...?
- Where is the best place for your garden?
- What size of garden do you need?
- Type and source of water available?
- What methods of water-wise irrigation is suitable for the project?
- What type of soil is available?
- How can the soil be improved?
- Is the land flat or sloped?
- Which sector of your garden is the Sun rising from?
- When do you get frost, rain, too much wind?
- What is the wind direction?
- What kind of animals do you need to include into the system?
- What source of manure and mulch is available?
- How can you protect your garden?
- How are you going to control pest and diseases?

Prosperity:

What recycling processes are you are going to apply?

What budget is available and from where?

How can the garden produce cash income? (e.g. crops, also products, services, seed)

What plants crops have a high, stable market value?

How much of the garden produce may be lost to pests, disease, theft and spoilage?

What crops, animals do you need to grow or rear for yourself and for the market?

How far is the market and what are your expected transport and storage costs?

What tools do you need?

Some tools for your garden are:

Forks, rakes, wheel barrow, hand forks, hand shovels, shovels, watering cans, hosepipes, manure, mulch, vegetable seedlings, herbs, flowers, tree seedlings, fruit trees, gloves, shears, hoe and strings and sticks, pen, note books, camera, folders, record books.

“All through the ages
the African people have made efforts
to deliver themselves from oppressive forces.

It is important that a critical mass of Africans
do not accept the verdict that the world tries to push down their throat
so as to give up and succumb.

The struggle must continue.

It is important to nurture any new ideas and initiatives
which can make a difference
for Africa.”

W a n g a r i M a a t h a i

(Environmentalist and Nobel Peace Prize winner)

Water

Fresh, clean water is our most precious resource. Water is biologically filtered and cleansed when it goes through wetlands (vleis or planted reed beds). Always protect wetlands from dumping and development-they work 24/7 to clean your water!

We need to think about water in 5 key ways – the 5 S's:

SLOW it down. Slow down the movement of water and the evaporation of water.

SINK it into the earth, via swales, pits and mulch to top up the ground water.

SPREAD it out. Channel the water to vegetated land via swales connected to small earth dams. Use water as many times as possible before it passes off the site.

SAVE it by reducing use and reusing the water from bathing or washing the dishes to water the garden. This is called grey water. It is vitally important to understand how much water you are using in your home and to irrigate the gardens.

STORE it. Catch water high up the slope. Store it in swales, small dams, ponds, barrels, tanks and reservoirs.

Irrigation

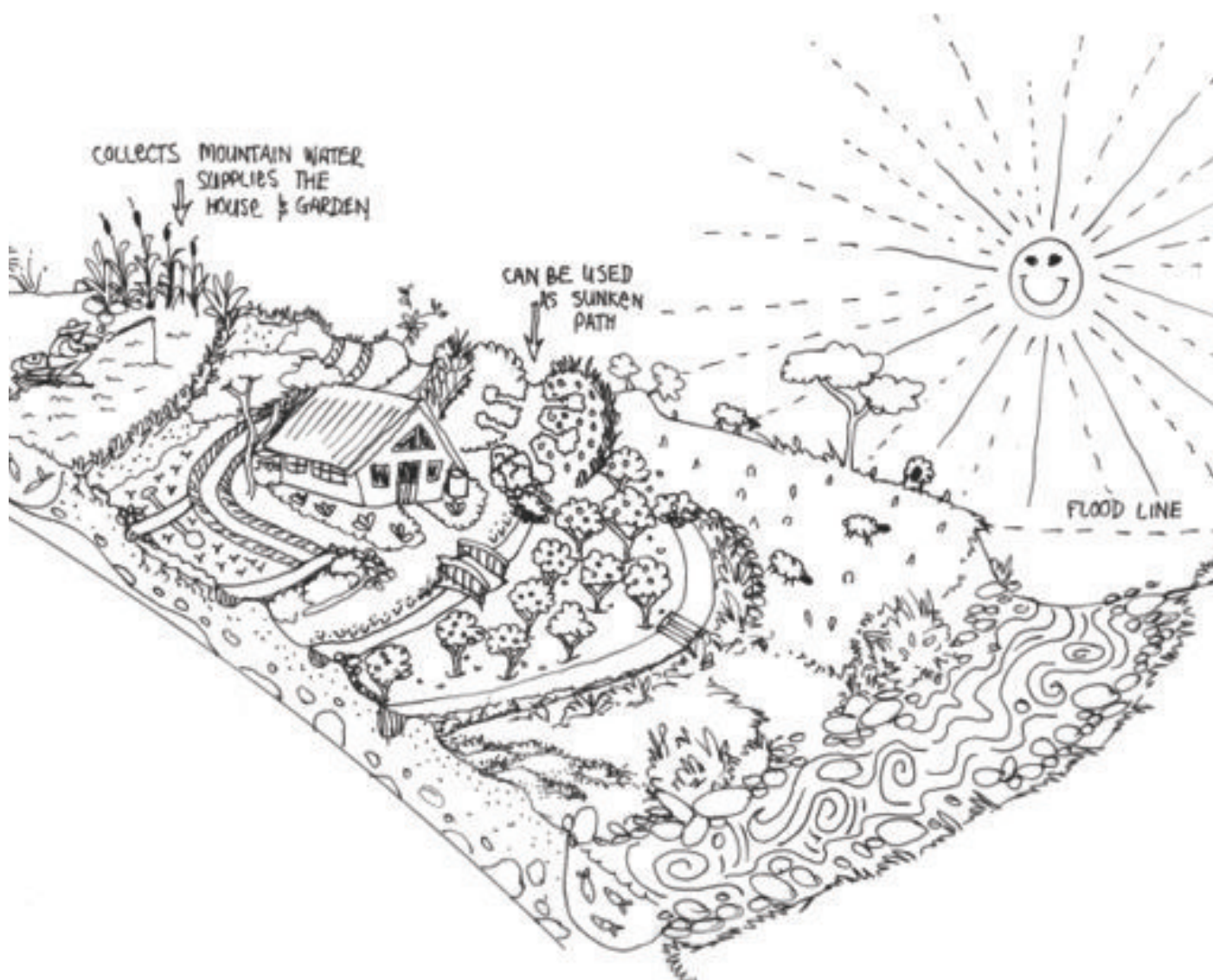
When trying to get an efficient delivery of water to the different parts of your garden, the simplest systems are the most elegant and efficient. Here are some of the irrigation methods that are promoted in Permaculture:

Hand and Micro-jet spray irrigation: Zones 0, 1 and 2 (as described on page 5) can be watered by hand with a hosepipe, a watering can, or with a micro-jet spray system. A micro-jet spray system consists of tiny (“micro”) sprinkler nozzles set on a rod. This is inserted into the ground, with a connection to an appropriate length of 15 mm class 3-irrigation piping. Micro-jet sprays generally spray in a 3-meter arc around them and the fineness of the spray is usually determined by the size of the spray nozzle and the water pressure. Fine nozzles and spray are only suitable for nurseries.

Drip irrigation: Drip irrigation is the most efficient irrigation system. Up to 90% of the water seeps into the soil and feeds the plants. Drip nozzles are inserted into 20mm piping that is laid down along the beds under the mulch in parallel lines. The drip nozzles are usually punched out 30cm apart and the pipe spacing is 50cm. In this way you cover all of your bed through the drippers. In a bed 1.5m wide you would run 2 lines of piping 50cm apart.

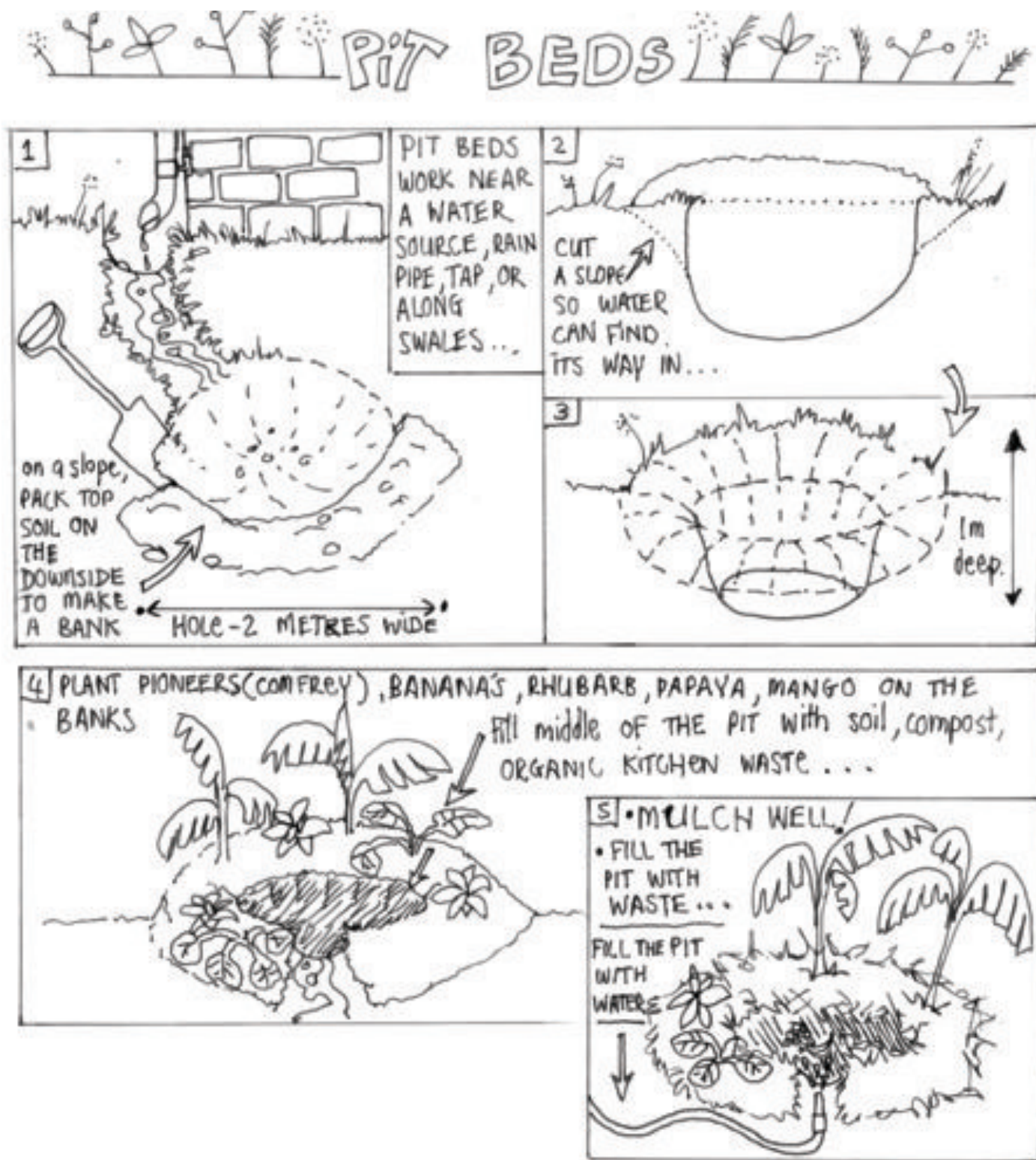
Swales:

Your garden should be designed to catch and hold water on the upper parts of any slopes. This is achieved by digging trenches called swales along contours. An A-frame is used to find the level across the site. Swales assist the water to sink and spread. The soil dug out is placed on the downhill side of the ditch which is then planted allowing plants to utilise the water that has been stored. Swales help to create little habitats or “niches,” with their own microclimates, windbreaks, suntraps, shady areas, etc. that create homes for predator insects and living trellises.



Pit Beds:

The Pit Bed is a great water-catching system. You dig it once and watch the fertility grow over the months. Pit beds are suitable both on a level or on a slope. You can send grey water or run-off water from roofs to a series of pits. Garden paths can also lead water to the pits if you want to concentrate water in certain areas (page 20).



Soil

Soil is not sand. Soil is alive with micro-organisms that help organic plant and animal matter to decay and release nutrients. A living soil is a vital and essential element in developing rich, healthy gardens. The key is to increase the organic matter in the soil. This provides nutrients, forms a “sponge” to hold water, and allows water and roots into the soil. Note that chemical fertilisers and pesticides make soil lifeless. There are different ways to restore the soil condition on your land depending on the scale of your gardening activities.

For intensive food production in zone 1 (page 5) the focus should be on developing compost, feeding earthworms and growing soil conditioning plants (like yarrow, comfrey and nettle).

In the less intense areas, zone 2 moving outwards, “pioneer plants” are used to start permanent ecologies. A pioneer plant is generally a tough, hardy plant that is able to establish itself easily and then proceeds to interact with the soil to create better conditions for other plants to grow. In other words, this is a way of getting plants to do the work that people would otherwise have to do.

Pest problems are often common in the beginning and start to stabilize as the system adapts and the different plants start to mature and interact to do their work.

Principles of soil conservation and restoration (Moore et al 1976:152):

- Keep soil covered
- Leave the soil untilled
- Maintain plant diversity
- Feed nutrients to the soil through mulch, compost and liquid manure

The key is to experiment, observe, and compare approaches to transforming soil.

Soil Preparation

Preparing the soil means getting air into it (aeration) and adding organic matter to improve it. If possible the soil should be prepared several months before planting to allow the added organic matter time to blend in and break down. If there is clay soil, the structure will be loosened whilst the sandy soil will hold water for longer. The secret of a rich and healthy vegetable garden is to feed soil regularly with organic fertilizers or compost.

Compost:

Nature maintains the fertility of the soil in a cycle, decomposing all dead animal and plant material, breaking it down to form a layer of “humus” on the top of the ground, assisted by micro-organisms (bacteria, fungi, micro-fauna) as well as worms, slugs, snails, insects, and birds. You can speed up this natural process by creating compost heaps.

Soil with added compost provides plant nutrients and improves water-holding capacity and structure of soil. This helps to produce healthy and disease-free plants.

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 a Compost Heap:

Almost all plant material will decompose in a compost heap. Avoid meat and bones as this will attract dogs. A good compost heap requires air and moisture, should always be damp and constructed in the shade.

A certain amount of heat has to be created for a quick and effective decomposition and for the destruction of any weeds that might be present.

For weed-free compost the heap should be turned every 2 to 3 weeks. This is also to let air in.

You can also get sufficient air to the micro organisms by building your compost heap on top of a layer of twigs or maize stalks that allow air to come in the bottom of the heap. You can also place 50mm poles in the middle to help the compost breathe.

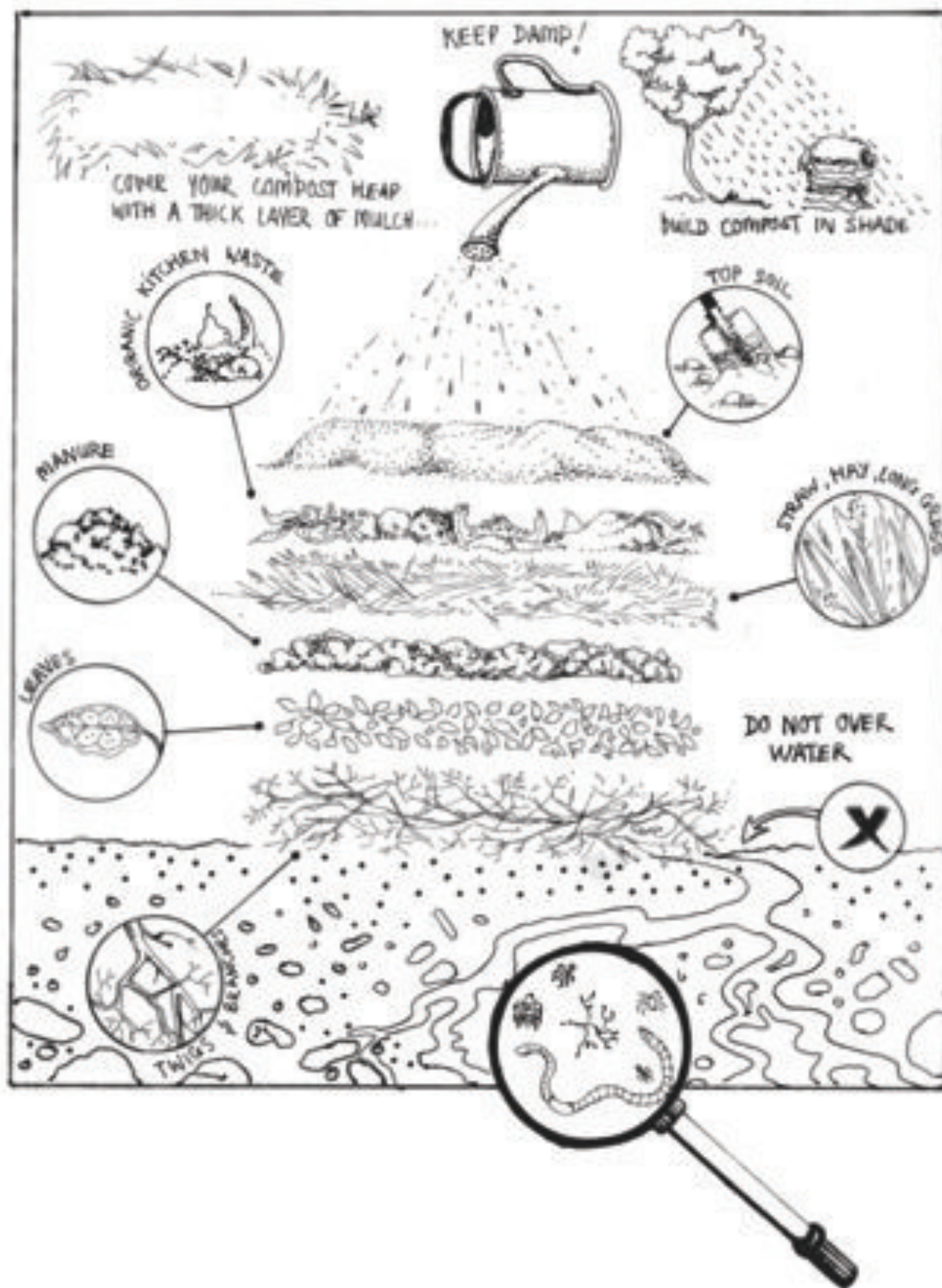
Bring together all kitchen and organic waste (including egg shells) to form the next layer. Break up any large pieces of material and mix it together. Build up the heap using layers of this kitchen waste in between layers of drier leaves or grass.

Moisten each layer as you build it.

Manure and urine is a source of Nitrogen and can be mixed in with the other material. This will speed up the composting process.

Finally add a mulch of straw, soil or old sacking to keep heat and moisture in.

MAKING COMPOST



Liquid Manure:

Liquid manure can be used to water plants that are heavy feeders during the growing season. It can also be used to “activate” compost. Liquid manure can be made from plant matter or animal manure. These should be in a barrel of water at a ratio of 10:1 and left to ferment for a few weeks.

Stinging nettle liquid manure is rich in iron needed for the chlorophyll formation of green leaves and helps build up a nice layer of decaying organic matter (“humus”) on top of the ground.

Cabbage leaf liquid manure aids the sulfur metabolism of the soil.

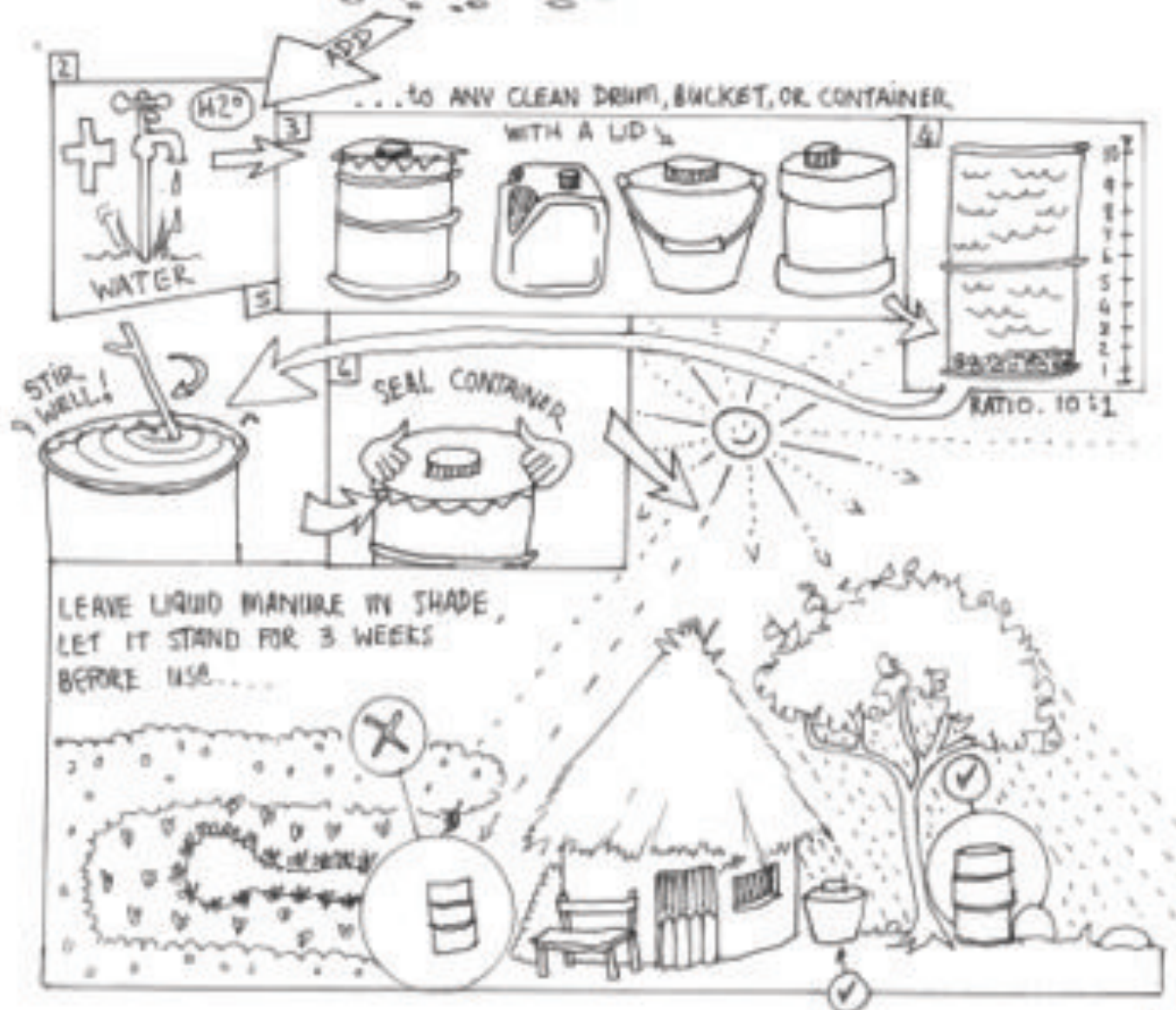
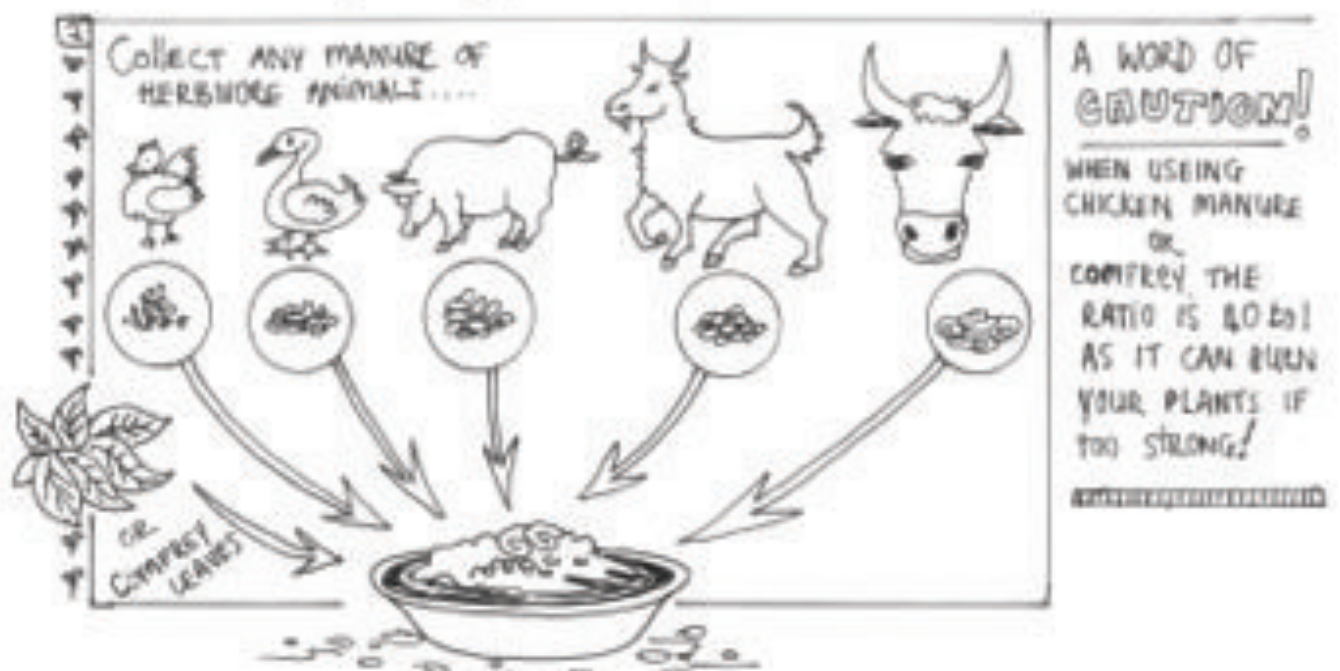
Comfrey and horsetail (*Equisitum*) are rich in various minerals (Calcium-Ca, Potassium-K, Manganese-Mn) and vitamins, and make an effective liquid manure.

Chicken and pigeon dung, as well as cow manure can be fermented in water and used for special feeding purposes – the bird droppings for flowers and fruits, the cow manure for aiding root development in general.

Liquid manure, which involves anaerobic fermentation, produces strong odours (sulfur, ammonia and swamp gas smells). To reduce odours it is advisable to stir daily to bring air into the brew. You can add compost or shredded stinging nettle to help the fermentation processes. Putting a floating layer of peat moss, chopped straw, or sawdust on the liquid manure absorbs the fumes. In the summer the inch-long, slug-gish, fat, rat-tailed maggots of the hovering flies, which feed upon decaying liquid substances, will develop in these potent brews as an indication that the liquid is ready to be used.



LIQUID MANURE



Mulching:

Mulch is a layer of organic matter that covers the soil. It can consist of dried leaves, dried grass, green grass cuttings, straw or even newspaper – shredded or single sheets weighed down with dried grass. This layer of mulch helps to prevent water evaporation, promote better water absorption and prevent the growth of weeds (as it takes away light at ground level). Mulch also prevents soil erosion, prevents excessive changes in soil temperature, enhances seed germination, increases important soil organisms such as earthworms and maintains Nitrogen, Calcium and Potassium at satisfactory levels in the soil.

There are two categories of mulch:

Dead mulch, which is dried out, decayed or dying e.g. straw, dried leaves, recently cut vegetables. Dead mulch must be collected (sometimes from scattered locations).

There are 2 types of dead mulch:

Organic mulch: compost, bark, grass, wood chops, dried leaves.

Inorganic mulch: stones, newspaper.

Living mulch, such as creeping groundcovers which grow underneath trees and shrubs and may require management (sowing, cutting back, sometimes re-seeding).

Using Mulch:

Mulch the bed immediately after planting.

Spread the mulch around the plants.

The mulch should be nice and thick (5-10 cm).

As mulch decomposes or is washed away, it must be replaced on a regular basis.

Keep mulch protected from fire.

Bed Design:

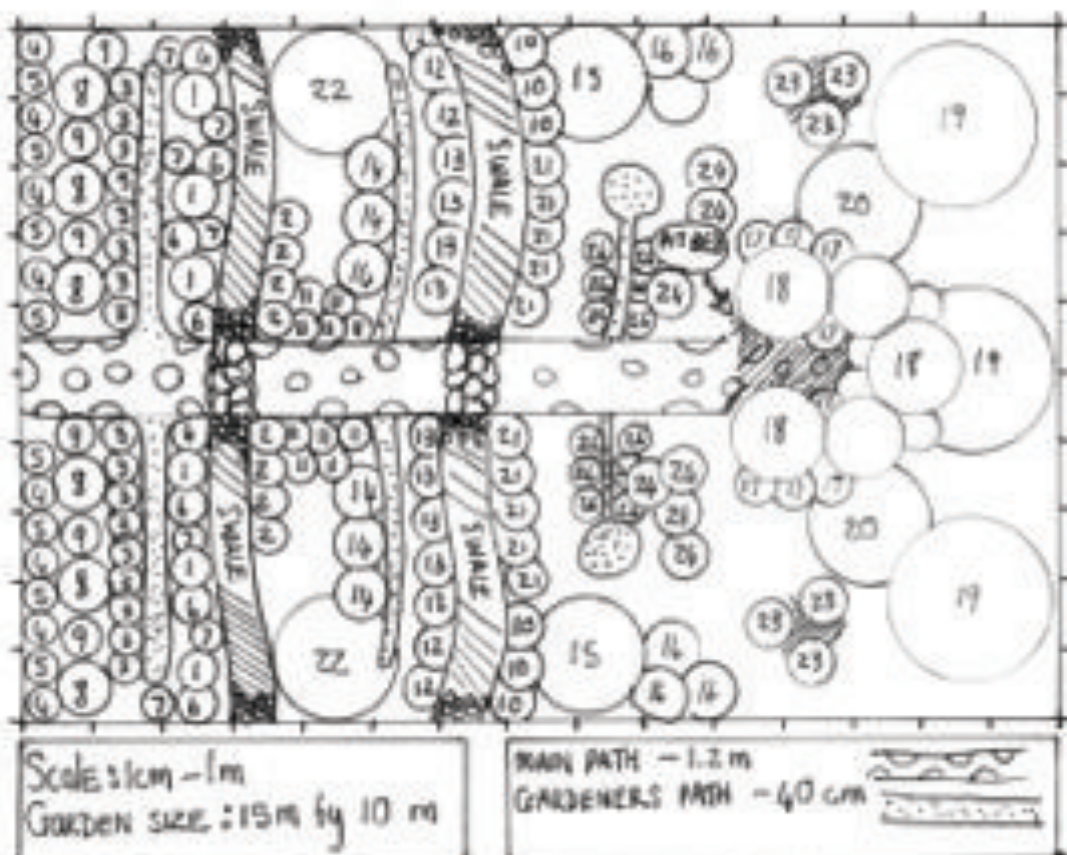
Gardens that work together with natural processes have a special quality to them, partly due to their abundant nature. For example, spiral designs increase the number of “edges” at which special conditions and micro-climates allow maximum yields. Spirals therefore provide more possibilities for variety than rectangular shapes.

GARDEN DESIGN

PROFILE OF SITE (SIDE VIEW)



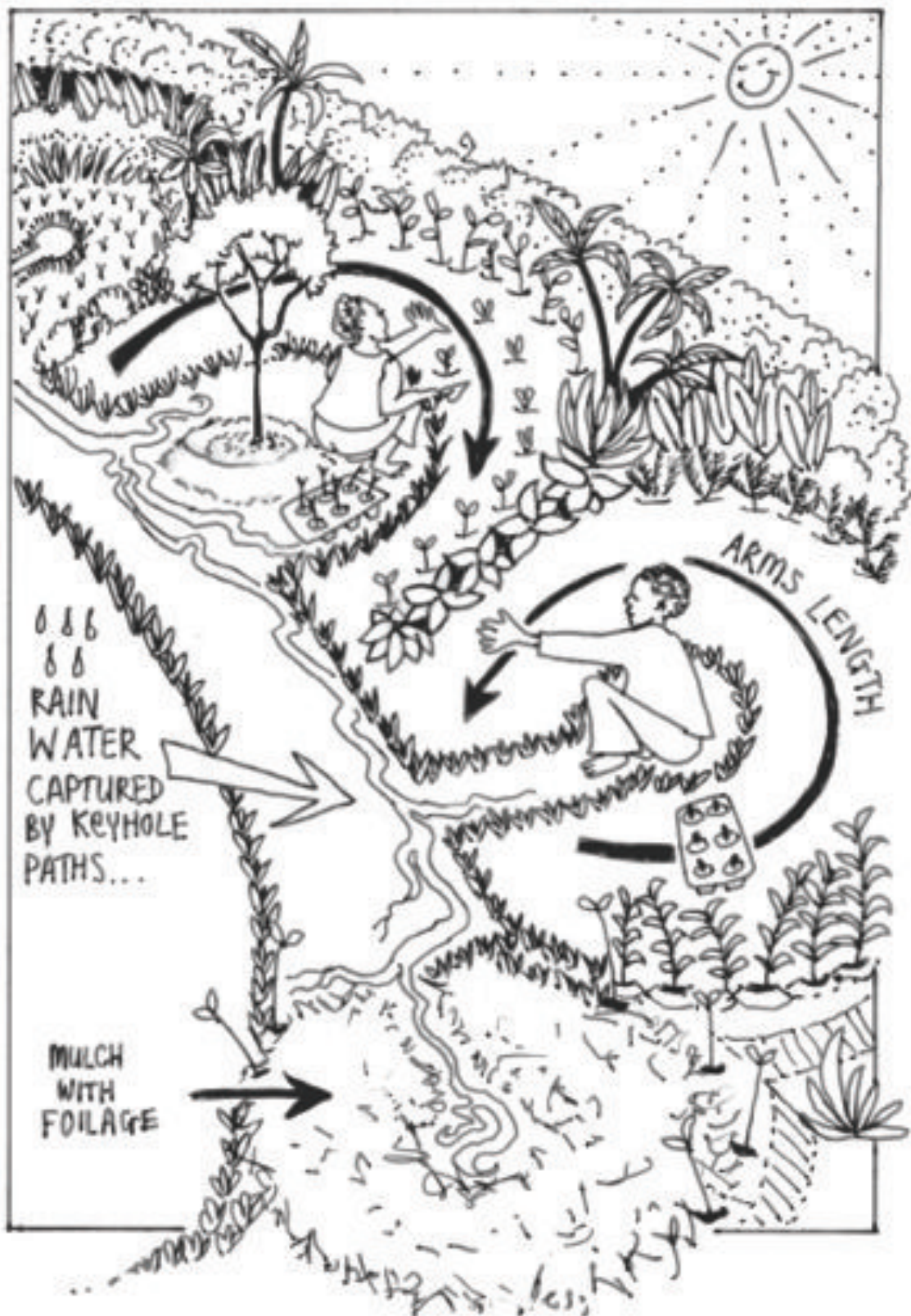
RESPLAN VIEW (TOP VIEW)



- | | | |
|------------------------|------------------------------|------------------------|
| ① LIMBA JAVENICA | ⑪ Siphonochilus arthropictus | ⑱ Carica papaya |
| ② MEXISA OFFICINALIS | ⑫ COMMON GRASS | ⑳ Psidium guajava |
| ③ ALLIUM SATIVUM | ⑬ ROSEMARY OFFICINALE | ㉑ Verbascum phlomoides |
| ④ ALOE VERA | ⑭ LERSTETIA MICROPHYLLA | ㉒ Derris angustifolia |
| ⑤ BULBINE FORTENSIS | ⑮ Moringa oleifera | ㉓ Cucurbita pepo |
| ⑥ LEGUMINIS LEONARDUS | ⑯ Urtica dioica | ㉔ Amaranthus viridis |
| ⑦ Achillea millefolium | ⑰ Hypoxis hemerocallidea | ㉕ Curcuma longa |
| ⑧ Citrus Limon | ⑲ Citrus limon | |
| ⑨ GERANIUM INCANUM | | |
| ⑩ Mentha longifolia | | |

Keyhole beds:

This design is very good for water catchment and companion planting. It is easy to maintain as everything is close at hand and it has a beautiful balanced appearance.



Some tips on Garden Maintenance

- Always practice good hygiene, keep the garden clean.
- Never leave rotten vegetables on the ground.
- Remove weeds and compost them.
- Water the garden three times a week, depending with the weather.
- Identify attacked vegetables and the type of pest.
- Use organic sprays.
- Keep the garden mulched.
- Develop windbreaks - wind dries plants out.
- Always interplant crops.
- Avoid using overhead sprinklers; the best methods are drip irrigation, micro-jets, hosepipes and watering cans.



Bio diversity

- plants and their connections:

Many different plants and animals living together is referred to as “biodiversity.” In a Permaculture garden, biodiversity helps to provide a similar range of resources that one would find in a healthy natural environment. This means there will be more choices with regards to nutrition and natural products. It also means that the interactions between the many different plants (and animals!) will facilitate the natural environmental processes, like those that ensure a healthy soil. Permaculture is based on natural forest systems. If we observe nature and her patterns we notice different plant species and assemblies grow together. If we examine them we will find that there are mutual benefits through the relationship. When we plant vegetables, herbs and trees we try to maximize the benefits of one species relating to another. This is called companion planting.

“Food Forests seek to mimic the resiliency, complexity and diversity of natural systems. They provide food, forage, fibre and fuel in quantities limited only by the designer’s imagination”

- Bill Mollison



Vegetable	Good Companion	Antagonist / Bad Companion
Asparagus	Tomatoes, parsley, basil	
Beans and bush beans	Potatoes, carrots, cucumbers, cauliflower, cabbage, summer savoury	Onions, garlic, gladiolas
Runner Beans	Corn, summer savoury	Onions
Beets	Onions, kohlrabi	Onions, beets, kohlrabi, sunflowers
Cabbage, cauliflower, kale, kohlrabi, broccoli	Aromatic plants, potatoes, celery, dill, chamomile, sage, peppermint, rosemary, beets, onions	Runner beans
Carrots	Peas, leaf lettuce, chives, onions, leeks, rosemary, sage, tomatoes.	Strawberries, tomatoes, pole beans
Celery	Leeks, tomatoes, bush beans, cauliflower, cabbage.	Dill
Chives	Carrots	
Corn	Potatoes, peas, beans, cucumbers, pumpkin, squash	Peas, beans
Cucumbers	Beans, corn, peas, radish, sunflowers	
Eggplant	Beans	Potatoes, aromatic herbs.
Leeks	Onions, celery, carrots	
Lettuce	Carrots, radishes, strawberries, cucumbers	
Onions and garlic	Beets, strawberries, tomatoes, lettuce, summer savory, chamomile	Peas, beans
Parsley	Tomatoes, asparagus	
Peas	Carrots, turnips, radishes, cucumbers, corn, beans, most vegetables and herbs	Onions, garlic
Potatoes	Beans, corn, cabbage, horseradish (corners) marigold, eggplant	Pumpkins, squash, cucumbers, sunflowers, tomatoes, raspberries
Pumpkins	Corn	
Radishes	Peas, nasturtiums, lettuce, cucumbers	
Soybeans	All	
Spinach	Strawberries	
Squash	Nasturtiums, corn	
Strawberries	Bush beans, spinach, borage, lettuce (border)	Cabbage
Sunflowers	Cucumbers	Kohlrabi, potatoes, fennel, cabbage
Tomatoes	Chives, onions, parsley, asparagus, marigolds, nasturtiums, carrots.	
Turnips	Peas	

Trees

The trees you plant will probably outlive you, so it is worth choosing carefully what you plant and where. The main restriction in most gardens is lack of space. Always remember that trees grow! Whatever you are planting, find out how big it may get, and plant it where it will have enough room to grow. Also find out if the roots are aggressive (e.g. willows), or else the tree will damage walls, paving and drains.

All trees can be used for some craft purposes, but some have special uses. Examples of uses and economic value include:

Bio-diesel and soap, shade, street trees, animal fodder, medicine, specimen and decorative garden trees, wood for furniture, sculpture and carving, food for bees, insects and birds. Trees also reduce heat and remove the poisonous fumes of cars (carbon sequestration). You can grow trees for food, especially nuts and fruit.

Tips for tree planting:

Select a site.

Measure 4m apart between fruit/nut trees.

Dig a hole of about 50cm deep x 50cm wide and 50cm length.

Mix the soil with manure 1 shovel of manure to 3 soil.

Return the soil in the hole and fill it up to form a heap.

Open the soil (size of the tree bag) to plant the tree.

Remove the plastic/ container in a way that you can use it again.

Insert a 50 cm old PVC pipe into the hole just below the roots of the tree.

The PVC pipe is excellent for providing water direct to the roots of a tree.

Plant the tree.

Make a basin around the tree to hold water and let it move slowly into the soil.

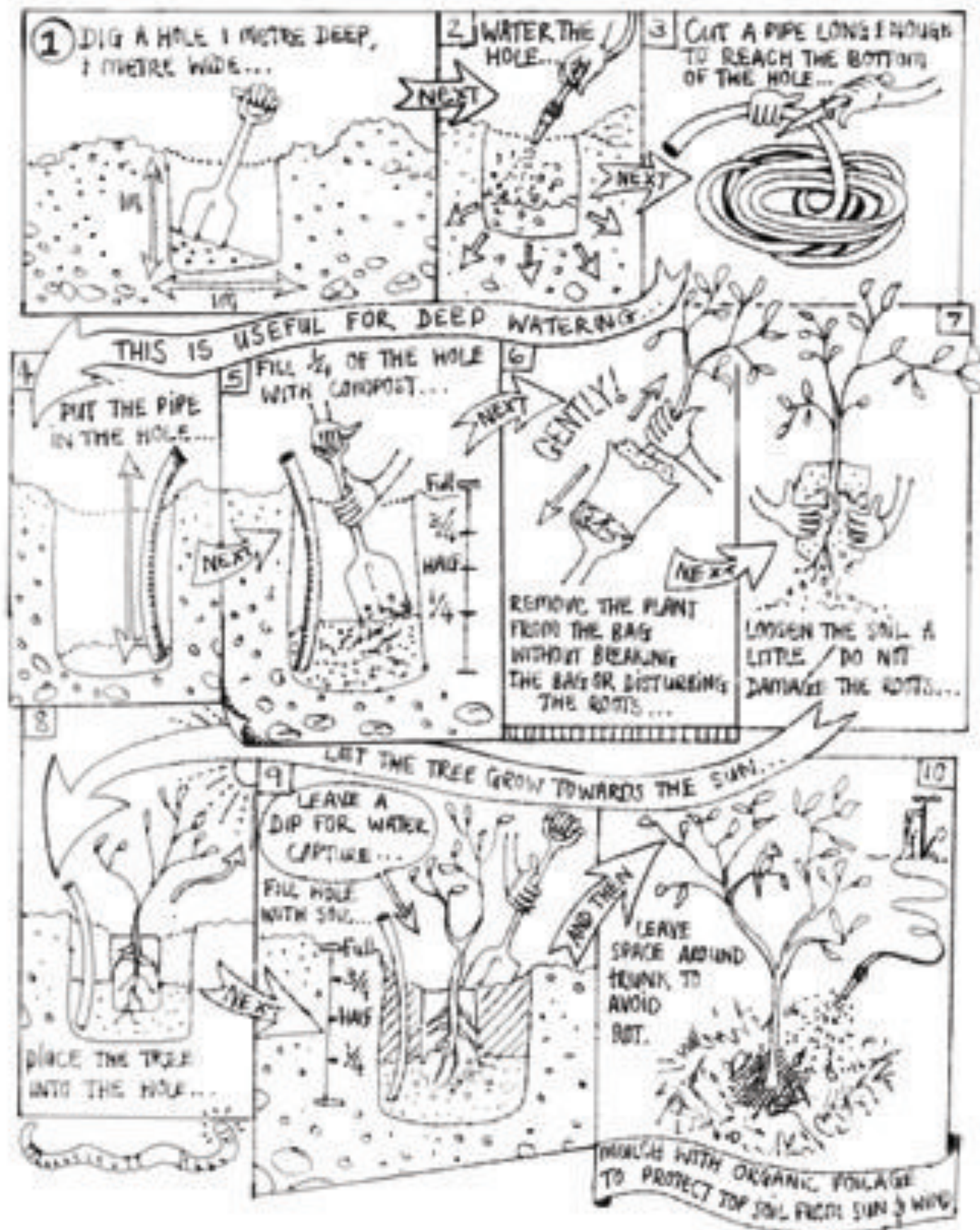
Make a “keyhole” bed around the tree for planting vegetables and herbs.

Micro jets are also excellent for watering fruit trees.

When you water the tree the vegetables also get water.

Water the tree twice a week for the first four months.

PLANTING A TREE



The value of Traditional Healing

African healing traditions have roots that stretch to a time long before Europeans arrived with their own “western” medical practices. This does not mean that traditional healing belongs to the past. Traditional healers have always continued to learn and have continued to discover new knowledge. Traditional healing in southern Africa should be considered as a modern day practice that is constantly changing, incorporating new ideas and adapting to new challenges. The value of this knowledge can be clearly seen in the way pharmaceutical companies seek to use it in the process of developing of new medicines.

Central to the practice of southern African traditional healing is the idea of maintaining relationships: the best relationships possible between all members of society and the best relationships possible between humankind and nature. This knowledge system does not divide mind and body as western medicine does. Instead, it sees and treats mind and body as one system of relationships. It does not draw dividing lines between the individual and the group; between waking states and dreaming; between religious beliefs and reality or between the living and the dead. Since this knowledge system focuses on the relationships between many interconnected parts it can be referred to as a form of “holistic medicine.” This focus on relationships sounds a lot like Permaculture doesn’t it?

Communication with the ancestors, and an intimate sense of being connected to those who have come before, tells you more than what family name or clan you belong to. It tells you that you are connected to the past and to the future – that all your actions will have consequences even long after you have died. It tells you what role you should play in society, how you should relate to everything around you and what knowledge you should try to preserve for future generations.

Traditional healing sees the human being as composed of a number of interacting systems that, together, create a bigger system, which can act with systems outside of it, and so on. In this way a person is understood to be within a number of different systems, like a family, the environment, broader society with its politics and economics, the ancestors, human traditions and the Universe.

Traditional healing from southern Africa, like many other traditional systems of medicine, focuses on restoring balance in the relationships that make up different systems. For example, it recommends that excesses are avoided. Too much heat or cold causes illness. Excessive indulgence in one food type leads to specific conditions. Extreme emotion or worry leads to nervous or psychological problems. Obsession with one idea or person can cause psychological torture. Thus, the traditional healer promotes balance in all aspects of human existence.

Southern Africa has a rich tradition of medicinal plant use and about 80% of the population makes use of traditional healthcare. It is estimated that over 150 000 traditional healers practice throughout South Africa. This prevalence of traditional healing is not unusual in countries where western medicine contributes only a small proportion of health care and where access to western medicine is too expensive for most. Traditional healers often live amongst those they treat in poorer communities and more rural areas, providing health care to vast majority of population.

The South African government recognizes the important role that traditional healers have to play in the delivery of health care and it has decided to integrate traditional healers into the health care system through a process of formal registration and standardization of practices.

While western health care workers are specialized in the kind of assistance they provide, traditional healers often play multiple roles from psychologist to herbalist, from political “spin doctor” to mediator of the ancestral realm.

It is wrong to consider traditional healing systems as completely unscientific or non-medical because of its traditional perspective. The creation and testing of traditional medicines often takes an experimental approach like science.

Western doctors often criticize traditional healers for using toxic substances. An obvious objection to this is the toxicity of things like antiretrovirals and chemotherapy. Modern medicine has its own illness-causing treatments. Addiction to benzodiazepines is probably one of the best examples of an illness caused by a medication that claims to replace the body’s natural processes. Another illness-causing treatment can be seen in hospitals themselves where strong disinfectants have bred powerful germs that resist disinfectants and cause a special kind of infection you only get in hospitals.

Just as western medicines have what scientists call “contraindications” so traditional healers also make warnings and suggestions about their medicines and the situations in which they should not be taken. E.g. the liquorice plant (mlomonande/molomo monate) should only be used now and then as high doses taken for longer than four weeks can lead to extreme low blood pressure (van Wyk and Wink, 2004). People with liver disorders, kidney problems, and a history of heart problems or stroke should not use it. It should also be avoided if you are pregnant or lactating. It can cause potassium loss and water retention. It also has possible negative interactions with digitalis drugs, corticosteroids, aspirin as well as other anti-inflammatory drugs.



Some of the advantages of traditional medicine

- In traditional medicine, health is seen as something more than just the absence of illness. Health is seen as the quality of life enjoyed by the whole person.
- Traditional medicine does more than treat an illness. It helps the person find a meaningful explanation for the illness. This creation of meaning is an important part of healing, allowing the mind to play an active role in the healing process.
- Traditional medicines usually involve many different compounds that can do many different jobs, compared to western medicine which tries to isolate pure compounds that can do one job extremely well. Because of their diverse chemical composition, traditional medicinal plants often have an effect on numerous organ systems simultaneously. These are called the tonics, e.g. *Schisandra chinensis* which works on the nervous system, tonifies the liver and regulates the kidneys. Individual traditional medicines tend to be more complex and treat a wider range of conditions. This creates a synergistic effect in which the total benefit is more than the sum of the effect of the individual compounds (Synergy is 1+1+1+5).
- Western medicine uses its pure compounds to destroy germs or other single causes of disease. As powerful and as useful as western medicine's approach is when dealing with potentially fatal infections, it often neglects what a complete healing process could do. Traditional medicine recognises that disease is caused by many different things working together over time and tries to treat the whole system. Illness is influenced by numerous factors, including mental state, belief, economic means, breathing, nutrition, sex life, social relationships, work life, etc.

-
- While western medicine tends to treat things quickly (and this is great for things like severe infections or trauma), traditional medicine tends to treat things over longer periods of time in order to create a higher state of health that will be less vulnerable to disease in the future. Medicinal plants tend to normalize physiological function and correct the underlying cause of the disease. For example acute headaches can be treated with pharmaceutical analgesics (pain killers) for immediate pain relief, while feverfew herb can be used for the chronic (long term) management of headache conditions, lessening their frequency and severity.
 - While some traditional medicines can be toxic and great care should be taken to take them in the right dosages, they are often more accessible and affordable. It takes about 10 years and 2 billion Dollars to develop a new western medicine.
 - The scientific literature itself actually supports the use of many traditional medicinal plants. Herbal medicine often performs better than expensive western medicine. A good example here is herbal treatments for certain forms of eczema.
 - Medicinal plants often have fewer side effects, better patient tolerance and have better acceptance due to long history of use. Medicinal plants are also less prone to the emergence of drug resistance.
 - Medicinal plants are renewable in nature unlike the synthetic drugs that are obtainable from non-renewable petrochemicals.
 - The cultivation of plants for medicines is environmentally friendly, unlike the pollution created by the chemical industry that is needed to create western medicines.
 - The availability of local plants means that there is the potential for income generation for local communities through medicinal plant cultivation.

Now let's have a closer look at some of these plants ...

Inflammation (arthritis), wounds, infections, fever

Yarrow

Woundwort, dikete tsa matlare (Sotho), duisendblad (Afrikaans)

Achillea millefolium Family: Asteraceae

Origin: Europe and western Asia, but grown worldwide. It was used by the ancient Greek warriors to stop bleeding. (*Achillea* refers to the legendary Greek warrior Achilles).

Description and cultivation: A small, upright branched, perennial herb with feathery green leaves. Flowers are white to pink. Lift and gently divide plants, planting them 50 cm apart (it will spread!). Give a little bit of compost and water twice a week.

Permaculture: Yarrow is a good soil improver and can be cut and added to compost as an activator (Roberts, 2000). It acts as a host for ladybirds and predatory wasps, which control insect pests. Yarrow is a “Plant doctor” and is a good companion to almost all other plants (including vegetables) (Bird, 1990).

Parts used: Leaves and flowers.

Medicinal Action: Anti-arthritis, reduces fever, anti-inflammatory, promotes urination (van Wyk and Wink, 2004), antiseptic, anti-spasmodic, anti-bacterial, anti-viral.

Uses:

Internal: It is used to treat arthritis, digestive upsets, to stimulate appetite, to relieve menstrual pains, for colds and flu's, to lower high blood pressure as well as for fever. May be useful for fighting HIV since it is reported as having anti-viral properties. **External** - The whole plant is added to bathwater to treat pelvis pains, and teas are used as a compress for bleeding, treating skin rashes and slow-healing wounds.

Preparation:

The leaves are picked in summer when in flower.

Internal:

- Teas are made from the stems, leaves and flowers by adding 1 teaspoon (5 ml) to 1 cup boiling water, left for 10 minutes, then drunk warm. Take 3 cups a day in cases of infection, for up to a period of 7 days (e.g. for flu). As a tonic and appetite stimulant drink 1 cup a day, 3 times a week.
- For flu's and respiratory infections make a tea by mixing Yarrow with *Mentha longifolia* (ufuthane lomhlange) and ginger, add honey to taste.

External:

- As a bath preparation for soothing body pains use 100 grams/6 teaspoons/30 ml to 20 litres of water.
- Use half a litre of standard tea and apply to skin.
- Crush leaves slightly and press on cuts and wounds to stop bleeding.

WARNING

It makes you urinate so remember to drink lots of water. The fresh plant can cause skin inflammation in sensitive people. It should not be used in people with sun sensitivity and not during pregnancy. It promotes menstruation, so do not use if you have heavy periods.



Treating infections

Garlic

Konofole (Sotho), knoffel (Afrikaans)

Allium sativum Family: Alliaceae

Origin: Garlic has been grown for so long, all over the world, that we now only know it only as a cultivated plant. The wild ancestor of garlic may have come from the Middle East or central Asia. The workers who built the pyramids in ancient Egypt were paid in leeks, onions and garlic. (Riotte, 1983). Presumably that was better than being paid peanuts!

Description and cultivation: Garlic is a perennial herb. It is part of the onion family and has fleshy, grey-green leaves with a strong onion smell. The leaves grow from a white bulb with a papery skin (The bulb is the part sold in shops, either whole or minced.). The bulb or its segments (called cloves) are planted in Autumn; 20cm apart in well-composted sandy soil at a depth of 7-10cm with the clove pointing upwards. They must be kept moist and warm to set root and send up leaves before winter when the bulbs will swell up with frost. By late spring leaves will emerge. Harvest the bulbs when the leaves begin to wither (Hoffman, 1991) .

Permaculture:

- The strong smell of garlic protects plants from pests like aphids. It is a good companion to Roses. It is also good in the orchard (Zone 2) against fruit tree borers - plant it close to the base of the tree.
- Garlic is antifungal and as a spray it can protect stone fruits from diseases.
- Garlic also increases the fragrance of flowers growing nearby (Riotte, 1983).

Where to get it: Garlic bulbs are sold at supermarkets and greengrocers. Chose bulbs that are firm and not dried up. Garlic seed is also available. If you are buying minced garlic for cooking remember that some suppliers mix minced onion into the garlic so that they can make more profit. Buy whole garlic if you want purity.

Parts used: Cloves (parts of bulb) and oil

Medicinal Action: Antibacterial, anti-viral, lipid-lowering (lipids = fats). Also claimed to be a stimulant and tonic and to promote sweating, expel mucous, promote urination and counter skin irritation (van Wyk and Wink, 2004).

Uses: Garlic is used as food, spice and medicine.

Internal:

- Used as preventative for most infections, digestive as well as respiratory (Hoffman, 1991).
- As the oil in garlic is excreted from the body through the lungs (causing smelly “garlic breath”) garlic is used for respiratory conditions such as chronic bronchitis, phlegm in the chest, recurrent colds and flu (Hoffman, 1991), as well as throat infections.
- Used for fever, indigestion, stomach infections and rheumatism.
- Taken internally as a worm remedy.
- Garlic cloves used for vaginal discharge and relief from burny urination..

Culinary (food and spice) use:

- By eating garlic regularly PLWHA can the good bacteria in the digestive system while pre-

venting infections by harmful bacteria and fungi (Hoffman, 1991) e.g. Candida.

- If eaten regularly garlic is believed to lower blood pressure, increase blood circulation and prevent clogging of the arteries (Hoffman, 1991). There is scientific evidence to support these beliefs. (van Wyk and Wink, 2004). Eating parsley after eating garlic will reduce the smell of garlic on your breath and in your sweat.

External:

- Garlic oil is used to ease the effects of bruises, sprains, ear ache and headaches.
- The oil is used to treat fungal infections such as ringworm (Hoffman, 1991), athlete's foot and nail fungus.
- Garlic applied to the skin for threadworm (Hoffman, 1991) and pinworm.
- Is a wide-spectrum antibiotic and wound cleaner.

Cosmetic

- Garlic is said to preserve a youthful complexion (Riotte, 1983) and clear acne.

Preparation:

- Candida, rheumatism, throat infections, colds, coughs, fever and indigestion: Chop up one or two cloves and eat daily with food.

Make garlic milk by crushing two garlic cloves and mixing it with 100ml (1/4 cup) milk or water, drink daily. When symptoms disappear, continue eating the cloves or drinking the garlic milk for two weeks to ensure that symptoms do not return.

- Clove halved and placed between the gums and cheeks will often soothe a headache.
- Worm remedy: Garlic milk made by crushing two garlic cloves and mixing it with 100ml (1/4 Cup) milk or water may be drunk or used as an enema.
- Vaginal insert can used be for vaginal discharge: Peel the garlic, taking care not to puncture it. Wrap it in a clean cloth or gauze, and put it inside the vagina.
- Rectal insert of a peeled clove of garlic that has not been punctured, can be dipped in olive oil (see *Olea europae* page 66) and inserted into the anus of persons unable to eat.
- Garlic oil: Extracted from the root, acts as antiseptic in treatment of wounds. Can also be rubbed on the skin to relieve bruises, sprains, ear ache and headaches; to clean skin ailments, treat ring worm, pinworm, acne, athlete's foot and nail fungus.

WARNING

- Garlic decreases the effectiveness of Anti-Retroviral Therapy (ART).
- Garlic can burn the mouth if eaten alone (UNDP 2002).
- If there is contact with eyes, wash out with milk.
- Garlic reduces the clotting of blood (van Wyk and Wink, 2004) and thus should not be used by people with blood clotting disorders. Don't take lots of garlic if you are going to have surgery as it will make you bleed more. Tell the Doctor before the operation if you are treating yourself with garlic. Garlic may stop anti-coagulant drugs like Warfarin from working properly (van Wyk and Wink, 2004).



Nutrition, immune system, wounds

Umhlaba

Bitter aloe, kgopha (Sotho), umhlaba (Zulu, Xhosa), bitteraalwyn (Afrikaans)

Aloe ferox Family: Asphodelaceae

Origin: South Africa, grows wild in the Eastern Cape, into Western Cape and southern part of Kwa-Zulu Natal.

Description and cultivation: Succulent with broad spiny leaves and red flowers that occur in candle shaped clusters. Easiest to grow from offshoots forming at the base of the plant. Can also grow from seed sown in Spring in well-drained soil (50% riversand, 50% loam) and kept moist for 30 days. Germination is usually in two weeks. Frost tolerant.

Permaculture: This is a good plant for Zone 5 (wild area) .

Parts used: Two different parts are used; the gel (non-bitter, inner fleshy part of the leaf), while the bitter yellow leaf juice (just under skin) is dried into clumps known as aloe lump or Cape aloes.

Medicinal Action: Gel: tonic, immuno-modulatory, and wound healing. Bitters: anti-microbial, laxative and tonic. The leaf gel of *Aloe vera* or *A. ferox* contains numerous amino acids, minerals, and enzymes.

Uses:

Internal: Cape aloes is used as a laxative and in smaller amounts is used in bitter tonics. It is also used for arthritis. Gel: is used as a tonic.

External: The leaf and bitter part of *A. ferox* is ground and applied to STI related (venereal) sores. Gel: is used on the skin either fresh from plant or in cosmetic form to soothe and heal wound/burns.

Preparation:

Bitters: a small crystal of the drug (0.05-0.2grams) about twice the size of a matchstick-head is taken orally as a laxative. Half the laxative dose is taken for arthritis. Very small amounts are included in bitter tonic drinks. Ground leaf and bitters is applied as powder to sores (STI's).

Gel: One can eat the clear gel of *A. vera* or *ferox* by slicing away the skin and eating the inner clear gel-wash off the bitters first. The gel is now popularly taken as a health drink. Aloe vera has the best quality gel. 1 teaspoon 3 times a day on an empty stomach is a safe dosage. The clear gel is applied to the skin to soothe and heal wounds and burns.

WARNING

Should be used periodically and moderately since bitters is found in the whole leaf and can be irritating for the digestive system. Use cautiously for people living with HIV/AIDS since it can worsen diarrhoea. The plant should not be used during pregnancy (Balch, 2000).



Tepe

Pig weed, Tepe ea bokoni, Tepe, Marog (Sotho), Gewone misbredie (Afrikaans)

Amaranthus hybridus Family: Amaranthaceae

Origin: There are several kinds (species) of *Amaranthus* originating in different parts of the Americas. Some of these are grown for their seeds, which are called Inca wheat or quinoa (say “keenwa”). Some of these American Amaranths are now global weeds. (Bromilow, 2001). There are also about 20 *Amaranthus* that are indigenous to South Africa, but these are used as spinach rather grain as in South America (van Wyk and Gericke, 2000)

Description and cultivation: Tepe is a 2-5 m high, erect, branched, perennial herb that dies back after frost. Grown from seed in marginal to well-composted soils in the full sun. Often self-seeds in disturbed areas. The plant reaches maturity in six weeks. The plant will die back if there is frost.

Parts used: Leaf, seed and juice of the whole plant.

Permaculture: Amaranth brings up nutrients from the sub-soil (Riotte, 1998) and thus is nutritious for adding to compost and feeding to chickens (seeds) and livestock (leaves). It will grow well in nitrogen-rich soil (e.g. old cattle kraals) as a cover crop. It can be used for silage (Mollison, 1990) and liquid fertilizer (Roberts, 2002). It also loosens the soil for root crops like carrots, radish and beetroot. It increases the harvest of potatoes and helps tomatoes resist insect attack. It is a good companion for onions, maize, green peppers and brinjals if you keep it thinned out (Riotte, 1998).

Where to get it: Find it as a weed on wasteland or near old kraals. Collect seed

Medicinal Action: *Amaranthus dubius* and *Amaranthus hypochondriachus* (a grain amaranth) are astringent, anti diarrhoeal, haemostyptic, inflammation of mucous membranes, diuretic (van Wyk and Wink, 2004)

Uses: All *Amaranthus* have edible leaves, but harvest only young shoots-the leaves become bitter as they age (Hutchings, 1996). The leaves can be dried for use in Winter.

Internal:

- The leaf is eaten or taken as an infusion to treat: Anaemia, chronic fatigue, chronic and intermittent diarrhoea, also for heavy menstrual bleeding, vaginal discharge, coughs, coughing up of blood and dysentery.
- Seeds can be ground into a powder and added to porridge and bread for additional nutrients.
- The juice of the whole plant is used to alleviate constipation.

External:

- The crushed leaf has been used as a poultice for bleeding wounds
- Infusions can be splashed on the skin to alleviate burning and itching skin, or as a wound wash.

Cosmetic:

- A leaf infusion can be used as a cleansing rinse for oily skin; it tightens the pores, reduces oiliness, moistens and cleanses the skin.

Preparation

- Fresh young shoots are boiled as a relish or cooked in pap (Fox and Young, 1982) or stew. Shoots can also be eaten in salads or lightly steamed.
- Leaf infusion can be made with 4 teaspoons (1/8 cup) dried leaf or 8 teaspoons (1/4 cup) fresh leaf to 200ml (1 cup) boiling water, stand for 5 minutes, strain and sip. Take 3 times daily.
- Seed powder can be added to porridge, bread and stews.
- Juice of the whole plant can be extracted by crushing the plant.

WARNING

Caution should be taken when harvesting from the wild not to confuse with: *Amaranth caudatus* (Chenopodiaceae) Leaf is used as abortifacient (Hutchings 1996). *Amaramthus thunbergii* infusion is taken to stimulate strong contractions of uterus in delayed onset of labour.



Lengana

Wilde als, umhlonyane (Zulu, Xhosa); lengana (Sotho, Tswana).

Artemisia afra Family: Asteraceae

Origin: Eastern side of Africa from the Cape to Ethiopia (van Wyk and Wink, 2004).

Description and cultivation: Multi-stemmed perennial shrub two metres high. It has feathery leaves with a strong smell. Grow from seed sown in Spring in well-drained soil. Keep moist, 50% of seed should germinate after 3 weeks. Can also be grown from semi-hardwood cuttings (pencil thick) taken in Spring and planted 3cm into riversand. Transfer to bags filled with 50/50 riversand and compost mix after rooting (about 8 weeks) Can tolerate frost and fire, usually dies down in Winter.

The plants produce new shoots quickly after harvesting (Diederichs et al, 2002).

Permaculture: This is a good plant for Zone 5 (wild area). Will help to keep pests away if used as a hedge around vegetable gardens.

Parts used: Leaves and stems, essential oil.

Medicinal Action: Relieves mild pain, anti-microbial, anti-worm, anti-oxidant and narcotic.

Uses:

Internal: It has been used for treating respiratory infections and problems (influenza, coughs, pneumonia, TB, colds and chest complaints). It is also used for treating fever, stimulating the appetite, constipation, indigestion, intestinal worms, malaria, and gastritis.

External: Used as a wash for haemorrhoids, measles rash, wounds, sores, rashes, bites, stings and eyes (Roberts, 1990).

Preparation:

Internal: Fresh or dried leaves and stems are made into teas, strong tea or tinctures. Teas are made by adding 1 teaspoon (5 ml medicine teaspoon) to 1 cup boiling water (add honey to taste). 1 cup taken preferably at night, or half a cup twice a day. For malaria treatment 1 cup three times daily. For malaria prevention 1 cup taken at night continuously and before entering malaria area. For chest complaints 1 cup taken at night. 3ml of decoction can be used on an empty stomach to get rid of worms. Repeat treatment again after 14 days. In all cases do not use for longer than 14 days.

External: Leaves may also be boiled in water as a steam bath and the fumes inhaled for treating blocked noses and cold and flu states.

WARNING

Do not take large doses and not longer than 14 days-the plant has toxic properties that can cause brain problems. Use in times of infection only. Don't use if pregnant or breastfeeding. Do not use if you have inflammation of the kidneys.



Bulbine

Incorrectly referred to as “Bulbinella”, Burn jelly plant, stalked bulbine, khoma-ya-ntsu-kammele, sehlare-sa-pekane, sehlare-sa-mollo (Sotho), Intelezi, ingelwane (Xhosa), Elimpofu (Zulu), Ibucu (Tswana), Balsemkopiva, geel katstert, copaiba (Afrikaans)

Bulbine frutescens Family: Asphodelaceae

Origin: Southern Africa

Description and cultivation: Perennial succulent with fleshy green leaves, filled with clear gel. Clusters of yellow or orange flowers are produced on flowering stalks of 60cm, year round flowering. Popular garden plant as it withstands drought and frost. Easiest to make more plants by root division (every two years), but also grown from seed. Once it flowers it will self-seed and spread. Grows well even in poor soils, but grows best in well-dug (loose), compost-rich soil with good drainage. Water twice weekly to for best yield of fleshy stalks.

Parts used: Fleshy leaf gel

Permaculture:

- Bulbine should always be planted at the kitchen door (Zone 1) so it is close at hand.
- When planted as a groundcover it is a fair bee food, also attracting butterflies.
- Plant with other water-wise plants like *Aloe vera*, sour fig (*Carpobrotus edulis*), carpet Geranium (*Geranium incanum*) and wild garlic (*Tulbaghia violaceae*).

Medicinal action: Soothes and moistens skin irritations, burns and wounds.

Uses:

External:

- Leaf gel is applied to mosquito bites, scrapes, cuts, grazes, burns, sunburn (Roberts, 1990) as well as rashes, itches, ringworm, cracked lips and herpes (van Wyk et al, 2000).
- It is also used for boils, eczema and as a moisturising base for shampoos (van Wyk and Gericke, 2000).
- The leaf gel can be applied to ulcers of the mouth.
- Applied externally to soothe any disorder of the skin.

Preparation: The leaves are squeezed to release the mucilaginous sap, which is applied topically (Roberts, 1990) It can also be applied as a warm poultice (van Wyk et al, 2000).

WARNING

- Do not use the roots unless under trained supervision.
- Do not take internally, but can be used in the mouth, anus and vagina.
- The leaf gel can be safely applied to almost all skin types, but sometimes people with very sensitive skin may experience a burning sensation.



Fungal infections (e.g. thrush)

Ghaukum

Hottentot's fig, Sour fig, chips, moriana-wa-ditsebe (Sotho), umgongozi; ikhambi-lamabulawo (Zulu), ghaukum, gaukum (Khoi), suurvy, perdevy, vyerank (Afrikaans)

Carpobrotus edulis Family: Mesembryanthemaceae

Origin: Indigenous to the Northern Cape, Western Cape and Eastern Cape.

Description and cultivation: Perennial creeper with thick fleshy leaves that have a triangle shape when cut across. Has large yellow flowers (the magenta flowers are from another species *C. acinaciformis*). It has edible fruit that are made into jams. Grow by dividing clumps or planting stem cuttings into sand. Needs very little water and good drainage. Frost tolerant

Permaculture: Useful for stabilizing dunes and eroding slopes. Plant at the bottom of contour swales where water and silt will be trapped. Is a useful pioneer plant. Can tolerate brack water and salt spray.

Parts used: Leaf juice or leaf pulp.

Medicinal Action: Antiseptic (anti-bacterial and anti-fungal). It also closes blood vessels and so prevents fluid loss from wounds and burns.

Uses:

Internal: The leaf pulp is used for oral and vaginal thrush in babies and adults. It is also used for other infections of the mouth, sore throats, diarrhoea, dysentery, digestive troubles and TB.

Culinary: The dried fruit is sold in the Cape for making curries and jams.

External: It is applied to eczema, wounds, ringworm, sunburn, bluebottle stings, mosquito/spider/tick bites and burns.

Preparation:

Internal: The leaf juice is gargled with for oral thrush and other mouth infections. Small amounts of fresh leaf juice are used to rinse a baby's mouth 3 times a day for oral thrush. 1 teaspoon of the fresh leaf juice is taken internally 3 times a day for dysentery, diarrhoea, digestive trouble and TB until symptoms clear.

TB remedy: equal parts Ghaukum juice, honey and olive oil mixed together. This is diluted in water and 2 tablespoons (30 ml) is taken 3 times a day (Roberts, 2000).

Vaginal douche: Let half a cup mashed leaves stand in half a cup of apple cider/plain brown vinegar for two hours. Then mix with two litres warm water. Make this fresh and use every morning for five to seven days. If thrush is still there after a break of one week, use the douche for another week (Roberts, 2000).

External: The mashed leaf pulp is applied to the skin to treat wounds and infections.



Nutrition, tonic, HIV-related sores

Pennywort

Gotu cola (Sanskrit-India), bolila-ba-linku (Sotho), tshiwa-mwando (Venda), inyongo, nongotyazana, nongobozana (Zulu), icukudwane (Xhosa), varkoortjies (Afrikaans)

Centella asiatica Family: Apiaceae

Origin: Tropical areas across the World

Description and cultivation: Creeping plant with long stems and heart shaped bright green leaves. Easy to grow by dividing clumps. Prefers moist areas like riverbanks. Frost sensitive

Permaculture: A good ground cover for inside swales.

Parts used: Above ground parts-mainly leaves

Medicinal Action: Sedative, anti-bacterial, anti-fungal, anti-inflammatory, wound healing, hypotensive (an agent that lowers blood pressure), and anti-tumour properties.

Uses:

Internal

- Used to treat fever, diarrhoea, leprosy, stress, TB, rheumatoid arthritis and cancer. It is also used for dysentery and as a tonic.
- Is a brain tonic and helps the absorption of other medicines by the brain.
- Used to relieve the pain of earache.

Culinary: Leaves are cooked as a spinach and eaten with porridge, especially in the Eastern Cape (Watt and Breyer-Brandwijk, 1962).

External: Ointments or lotions made from crushed leaves are applied to the skin for treating wounds, burns, ulcers. It is used to accelerate wound healing and prevent the formation of scars.

Preparation: It is harvested throughout the year.

Internal:

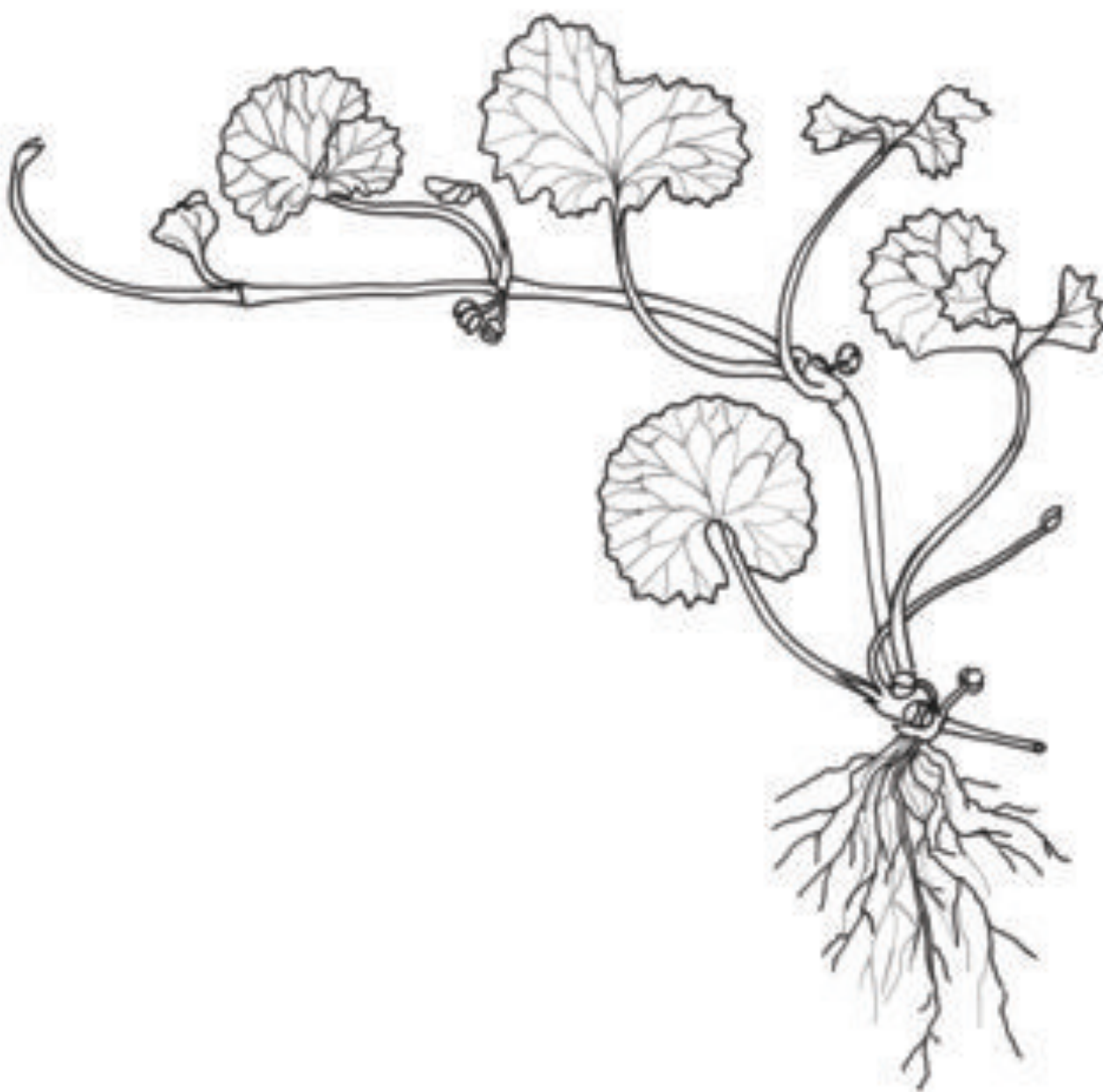
- 1.8 grams of powdered herb can be taken once a day (roughly half a 5ml teaspoon) with water. In cases of infection, use for no longer than 7 days.
- Leaves are also eaten raw in salads as a dietary supplement or tonic vegetable. Use periodically in salads. It is very tasty and nutritious.
- Welsh remedy for earache is to squeeze 1-2 drops of juice into the ear to relieve pain (Hoffman, 1991).

External:

A paste made from the crushed leaves is mixed with aqueous cream and applied to skin ailments, e.g. eczema, wounds and sores (useful in treating HIV related sores).

WARNING

Not to be used in epilepsy, pregnancy and lactation, (causes abortion and effects menstrual cycle). May cause skin irritation. Do not use excessively. Remember to eat yoghurt to replace good stomach bacteria.



Turmeric

Turmeric (English); bhorri (Hindi-Indian, Gewone misbredie (Afrikaans)

Curcuma longa Family: Zingiberaceae

Origin: Turmeric is an ancient cultivated plant, probably originating from India. Now grown in many tropical areas (van Wyk and Wink, 2004).

Description and cultivation: A stemless leafy perennial with attractive yellow and white flowers that occur as spikes. It is grown from root cuttings and needs well-drained soil and a humid climate. The rhizome (bright orange inside) is dug up in Winter.

Permaculture: In dry areas it should be planted inside swales or drainage channels.

Parts used: Rhizome (“root”)

Medicinal Action: It is reported to have anti-HIV activity, anti-inflammatory, anti-microbial, and anti-oxidant properties.

Uses:

Internal:

- It is most commonly used to stimulate the secretion of bile (for digestion of fats, i.e., as a digestive aid) also for other digestive problems such as gastritis, excessive gas and healing peptic ulcers.
- Used for Candida, jaundice and high blood pressure.
- It also has potential anti-cancer uses (van Wyk and Wink, 2004).

Culinary:

- It is used as a spice and food colourant. Available as a powder from most supermarkets.

External:

- The powdered “root” is applied to the skin for fungal infections.

Preparation:

Internal:

- For infection use in powder form (1 teaspoon with water twice a day).
- Lower doses can be used as an antioxidant and digestive aid.
- Half a teaspoon a day can be used in meat dishes and stews.

External:

- Use the powdered “root” directly on fungal infections

WARNING

- Not to be used in pregnancy or for those with anaemia.
- Extended use can result in stomach pain.
- Not for persons with bile tract obstruction or gallstones (van Wyk and Wink, 2004).



Fever, anti-viral

Sand Olive

sand olive; mutata-vhana (Venda), sandolien (Afrikaans)

Dodonaea angustifolia Family: Sapindaceae

Origin: Southern Africa

Description and cultivation: Small tree often used as a “live-fence” species in Southern Africa. It has long, narrow leaves that appear shiny because of chemicals from the plant that seep from the pores in the leaves. Crushed leaves have a strong aroma. Greenish -white flowers occur followed by small winged papery fruit. Grown from seed or cuttings.

Permaculture: Can cope with wind or drought and grows quickly into a hedge or wind break.

Parts used: The leaves and ends of the twigs

Medicinal Action: Reduces fever, anti-viral; may be useful for treating HIV infection.

Uses:

Internal:

- Teas used for TB, fever, influenza, pneumonia, colds, stomach trouble, arthritis. Also used as a gargle for sore throats and oral thrush.

External:

- Used to prevent itching in cases of skin rash.

Preparation:

Internal:

- Fresh leaves and twigs are boiled in water, left for a while and then filtered and drunk as a tea. 6 grams or 1 teaspoonful (5ml spoon) of dried herb is used per 1 cup of boiling water. Drink 1 cup a day. Use for a period of not more than seven days. One can add ginger and honey to the tea for treating colds, flu's and other respiratory infections.

External:

- A tea applied to skin using a soaked bandage.

WARNING

- It is a powerful medicinal plant and should be used only in times of infection.
- Do not use continuously.
- Do not use large doses as it causes bowel movement.



Sexually transmitted infections, Menstrual, Urinary tract

Geranium

Carpet Geranium (English), Tlako, ngope-setsoha (Sotho), Mlako (Tswana), Vrouebossie, amarabossie, mannetjie rabassam, meidjiejanwillemsse (Afrikaans)

Geranium incanum Family: Geraniaceae

Origin: Southern Africa, occurs naturally along the south coast (W. and E.Cape to PE).

Description and cultivation: Small perennial shrub with finely divided silver-green leaves. The flowers are ~2cm in diameter and are typically magenta, sometimes pale pink, violet or white. They are carried on long thin stems and mature into distinctive fruits with an elongated shape, resembling a stork's beak. An important distinguishing feature is that the flower hairs lie flat, and are not star-shaped as in related species. The species of *Geranium* in southern Africa are quite similar, so it is often not clear which species is referred to in records of traditional or medicinal use (van Wyk et al, 2000). *Geranium* prefers soils with good drainage and some compost. It will grow in full-sun or light shade. Can be grown from seed or runners in lightly composted soil, at a depth of 2cm (1 finger), keep moist until germination in about 10 days, from then water lightly twice a week. Tlako is drought tolerant, but can only handle mild frost. Sometimes it will die back only to reappear again.

Permaculture: Tlako is a good landscaping plant, if mass-planted it will form a beautiful ground cover that lasts for years. In very hot areas it will grow better in the light shade of trees.

Parts used: Leaves, rarely the root

Medicinal Action: Astringent, antiseptic, anti-inflammatory. Anti-diarrhoeal and closes blood-vessels. Forms protective layers on skin and mucous membranes.

Uses:

Internal:

- Used as a tea substitute (Watt and Breyer-Brandwijk, 1962), for treating bladder infections, venereal diseases, menstruation ailments (van Wyk and Gericke, 2000) and diarrhoea.
- Some reports of strong tea being effective for expelling worms (Roberts, 1990).

Cosmetic:

- Used as a lotion for dry, itchy skin and a rinse for oily hair (boil 2 cups leaves with 2 litres water for 10 minutes) (Roberts, 2000).

Preparation:

- The fresh leaf 20 g (1/4 cup) or 5 g (1teaspoon) dried powdered leaf is infused in 250ml (1 cup) boiling water, cooled (5 min), strained and sipped for treatment of urinary tract infections (UTI), Sexually transmitted infections (STI) and menstrual troubles (hence the Afrikaans name "Vrouebossie").
- Leaf infusions can be taken once daily until infections clear up.
- The whole root is infused in 250ml (1 cup) boiling water, cooled (5 min), strained and sipped for treatment of diarrhoea. Is also an effective anti-inflammatory.

WARNING

If using Tlako to treat diarrhoea, note that it also promotes urination so be careful to avoid dehydration, which can be fatal for babies and young children.



Tonic, HIV-AIDS, Cancer

Inkomfe

African potato, Manto's potato (English); lotsane (Sotho), tshuka (Tswana), inkomfe enkulu (Zulu); sterblom (Afrikaans)

Hypoxis hemerocallidea Family: Hypoxidaceae

Origin: Southern Africa

Description and cultivation: Tuberous perennials with long strap-shaped leaves and yellow star-shaped flowers. Produces many seeds-sow in pots in a mixture of 50% river sand and 50% loam. Seed trays should be kept moist until germination, which normally takes 14 days. Seedlings are raised in a greenhouse and planted out after one year. They prefer sandy soil. Frost tolerant, dies back in winter. Bulb will only mature and work as a medicine after five years. GROWING WILL HELP CONSERVE THE PLANT, WHICH IS BECOMING RARE IN THE WILD.

Permaculture: Although it needs very little care, if you want to harvest for own use it may be better to plant it in zones 1 or 2. If planted in zone 5 there is a good chance that someone will harvest it before you! It is popular with collectors for the muti markets.

Parts used: The underground tuberous rootstock or corm ("potato") is used. It is blackish outside and yellow within when cut fresh.

Medicinal Action: Anti-inflammatory, anti-HIV and anti-cancer.

Uses:

Internal:

- Strong tea from the corm is used as a strengthening tonic for children with wasting disease ("slims disease"-HIV), as well as for TB, urinary infections and cancer.
- The stems and leaves are mixed with other ingredients to treat prostate problems and urinary infections. There are some reports of the tea of the corm being used for mental disorders (anxiety and depression).

External:

- Thin pieces of root are applied to soothe blisters

Preparation:

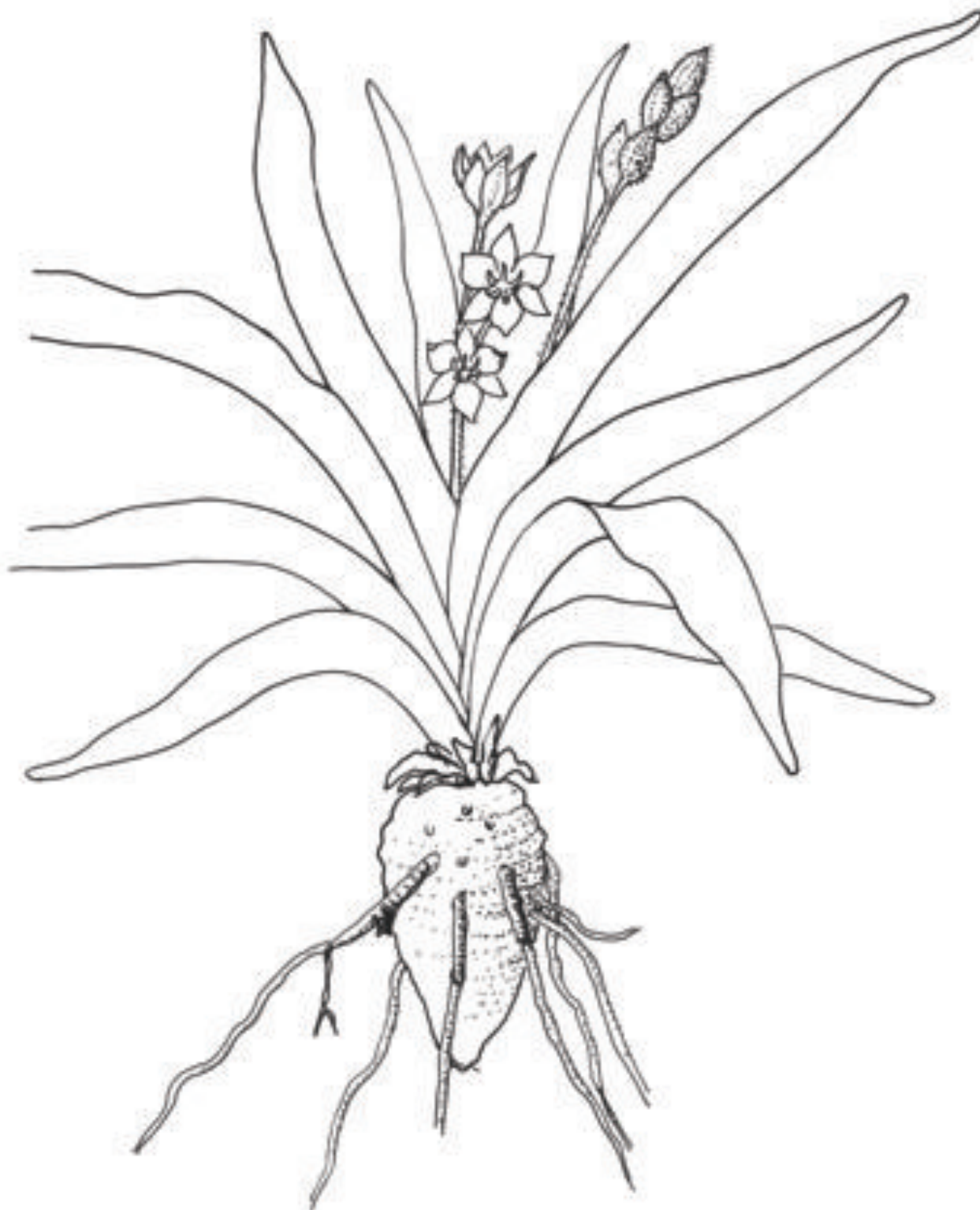
Fresh: cut a slice from a corm 3 cm thick and make a decoction by boiling it for 20 minutes in one litre water. Fresh is best as the active ingredients oxidise when exposed to air. Drink 1 cup a day.

Dry: Usual dose is about 2-4 grams of dry root daily. One can take half a teaspoon (2.5ml) of powdered root a day.

- It is normally taken for not longer than a month, but in HIV/AIDS patients it can be taken until the patient's condition stabilises. It is also useful for secondary infections.

WARNING

- Don't use if on anti-retroviral therapy (ART) as it can interfere with the medication.
- Do not use continuously.
- Use for a month then give it a break.
- Do not use large doses as it can act as a laxative



Lebake

Wild dagga (English); umunyane (Zulu); lebake (Sotho); umfincafincane (Xhosa); mhlahlampetu (Shona); wilde dagga (Afrikaans)

Leonotis leonurus Family: Lamiaceae

Origin: Southern Africa

Description and cultivation: Shrub of 2-5 m in height, with long brown branches. The leaves grow opposite each other on the stem. Bright orange, tubular flowers grow in characteristic rounded groups, along the branch ends. Grow from seed sown in spring, germinates easily, can be sown outdoors direct into beds, and prefers bright sunny conditions. Frost tolerant.

Permaculture: Can be grown as a fast windbreak around vegetables and herb beds.

Parts used: Leaves and stems, sometimes the root.

Medicinal Action: Antiseptic.

Uses:

Internal:

- Leaf and stem strong tea are taken orally or as an enema for coughs, colds, influenza, bronchitis, high blood pressure, and headaches.
- Leaf teas are used for asthma and viral hepatitis, dysentery, and for removing tapeworm.

External:

- Leaf and stem decoctions (strong tea) are applied to treat skin diseases, insect bites, stings, boils, eczema, and itching.

Preparation:

Strong tea is made by adding about 50 g or 8 teaspoons (8 x 5ml measures) of the dried leaves to one litre water, and boiling for 20 minutes. Drink half a cup 3 times a day. One can make a syrup from the strong tea for coughs and bronchitis by adding honey.

WARNING

- Do not use in pregnancy-may cause abortion.
- The leaves are said to cause bowel movement. Start small doses first then increase, to test what causes diarrhoea.



Adaptogen (Tonic), anti-viral

Musapelo

cancerbush, musapelo (Sotho), unwele (Zulu); belbos, bitterblaar (Afrikaans)

Lessertia microphylla (changed from *Sutherlandia frutescens*)

Family: Fabaceae

Origin: Southern Africa

Description and cultivation: Perennial shrub of up to 2 m in height. It has compound leaves, bright red flowers and balloon-like pods. Sow from seed in spring in well-drained soil, keep moist, germination takes about 10 days. Can be grown from hardwood cuttings taken towards the end of winter. Frost tolerant.

Permaculture: Needs very little attention but is so attractive when in flower or pod that it deserves to be grown in Zone 1!

Parts used: Above ground parts: leaves and stems.

Medicinal Action: Anti-viral, anti-diabetic, anti-stress, Anti-cancer.

Uses:

Internal:

Alcohol tinctures, teas and strong tea of the leaves and young stems are used for stomach problems, internal cancers (prevention and treatment), fever, poor appetite, indigestion, peptic ulcer, dysentery, diabetes, colds, flu, cough, asthma, chronic bronchitis, kidney and liver conditions, rheumatism, heart failure, urinary tract infections, stress and anxiety. It is considered an adaptogen (tonic plant) that has shown to be very good in improving the health (weight gain, appetite and well-being) of HIV-AIDS patients.

Preparation:

A tea is made by adding one 5 ml teaspoon of dried/fresh leaf (1-2 g is a safe daily dose) to 1 cup boiling water. The same dosage can be taken as a decoction. Improvements for HIV-AIDS patients should be seen in 1-2 months. A tincture (steeping herb in alcohol) can be made by adding 5 tablespoons dried leaf powder to 100 ml alcohol base, taken as 1 teaspoon twice daily.

WARNING

- Don't use if on anti-retroviral therapy (ART) as it can interfere with the medication
- Don't use during pregnancy since it can cause birth defects.
- Should not be used in people with leukaemia or lupus (auto-immune disorders).



Infections (colds and flu)

Koorsbossie

Fever tea; Musukudu, mosunkwane (Sotho); Inzinziniba (Xhosa); Umsuzwane (Zulu); Musudzungwane (Venda); Koorsbossie (Afrikaans)

Lippia javanica Family: Verbenaceae

Origin: Widespread from South Africa to Kenya

Description and cultivation: Perennial woody shrub 1 – 2 m high. The hairy leaves gives off a strong lemon-like smell when crushed . Small cream flowers can be found on the shrub from summer to autumn. It can be grown in spring and summer from seed in a well drained soil, or hard wood cutting can be taken in early spring.

Permaculture: Lippia has a good potential as an essential oil crop and deserves inclusion into wind breaks and hedges. It is an organic pesticide. If there is lots of *Lippia* in a pasture it indicates overgrazing (Manders Pers Comm).

Parts used: Leaf and twigs.

Medicinal Action: Decongestant, antiseptic (van Wyk and Gericke, 2000).

Uses:

Internal:

- Leaf infusion is used to treat bronchitis, cold, flu, chest ailments, influenza, stomach problems and malaria. Lippia is also a beneficial digestive.

• External:

- Leaf infusions are used topically to treat measles, rashes, scabies and lice.
- Stronger leaf infusions are used for skin disorders as a lotion.

Preparation:

- Infusions are made by taking 2-4 grams (2 teaspoons) fresh leaf or 1-2g (1/2 teaspoons) dried leaf 250ml (1 cup) boiling water, cooled (5 min), strained and sipped, it can be taken 3 times daily.

WARNING

Potential poisoning in cattle.

There are concerns about toxicity, but is drunk widely as a tea in Botswana.



Stress, digestive, infections

Lemon Balm

Melissa, Lemon balm, Bee balm

Melissa officinalis Family: Lamiaceae

Origin: Around the Mediterranean and Asia Minor. Commercial growing in south-west, central and eastern Europe.

Description and cultivation: This perennial creeping herb grows to 90cm. Grow from seed in well dug soil with compost and good drainage. *Melissa* is hardy, liking the full-sun where spread out, When large it can be lifted and divided at any time except when very cold.

Permaculture: Essential oil is extracted from the leaves by steam distillation. Plant *Melissa* together with fruit trees and vegetables, as it will attract bees.

Parts used: Fresh and dried leaves.

Medicinal Action: Reduces stress, prevents gas, anti-viral (van Wyk and Wink, 2004).

Uses:

Internal:

- Traditionally used to treat colds, flu and fever.
- 1 or 2 fresh leaves can be added to the water bottles or tea of nervous babies to soothe them, and in cases of tobacco poisoning.
- Fresh leaves can add to flavour to salads, sweets, fruit juice, soups and bean stews.
- Fresh leaves are added to bath water for a calming and soothing effect, sit in the bath so the water is covering your hips (Sitz bath)
- Fresh leaf 3-9g (1/4cup) or dried and powdered (1.5-4.5g) infused in 250ml (1 cup) boiling water, cooled, strained and sipped several times daily for appetite, sleeplessness and nervous stomach disorders. Also for relief from anxiety and nervous headaches.
- Lukewarm leaf infusions can be used for earache by gently washing out the ears.
- Infusions with honey to taste are drunk at night to help adults and children sleep soundly.

External:

- Fresh leaves are crushed and applied directly to the skin, for relief from bacterial, fungal and viral (Shingles-*Herpes zoster*) infections, and stings from bees and wasps.
- Leaf powder can be mixed with aqueous cream, makoya even honey to treat and bring relief from viral (Shingles- *Herpes zoster*) skin infection.

Preparation:

- Melissa can be combined with cayenne pepper, ginger, lemon and honey for a stimulating infusion to help pass urine: 3-9g (1/4 cup) fresh *Melissa* leaves, 2.5ml (1/2 teaspoons) cayenne pepper powder, 15ml (3 teaspoons) grated ginger root, juice and grated skin of 1/2 lemon, 15ml (3 teaspoons) honey, 1 litre (4 cups) hot water (not boiling).

WARNING

Melissa promotes urination, so drink plenty of water (2 litres/8 cups) / day.
In large dosages *Melissa* act like a sedative-be careful if driving.



Digestive, Infections

African Mint

ufuthane lomhlange (Zulu); koena-ya-thaba (Sotho); inixina (Xhosa); ballerja (Afrikaans),

Mentha longifolia Family: Lamiaceae

Origin: Southern Africa

Description and cultivation: Perennial herb growing up to 0.8 m tall, with creeping rhizomes. Small white or pale purple flowers are borne in clusters on the tips of the stems. It is very aromatic (strong smelling). It grows well in moist wet places. Propagation is from runners or cuttings placed into water or wet soil. It is a very hardy plant and can also be sown from seed in the warm months. Frost tolerant, but dies back in winter.

Permaculture: Mint attracts useful insects such as hoverflies (which eat aphids) and predatory wasps. It can be used to make a spray for ants, cabbage pests and mosquitoes. It will take over beds if there is enough water and little frost, so take care. Good companion for brassicas (cabbage, cauliflower, Broccoli), cucurbits (pumpkin, courgettes, squash) (Bird, 1990).

Parts used: Leaves

Medicinal Action: Antiseptic, decongestant.

Uses:

Internal:

- Leaf teas and strong teas are drunk for coughs and colds. It is also used to treat headaches, fevers, indigestion, hysteria, insomnia, urinary tract infections and painful menstruation

External:

- Used to treat wounds and swollen glands

Preparation:

Internal:

- Teas are made by adding 1 teaspoon (5ml measure) of leaf to 1 cup boiling water. Drink 1-2 cups daily. It can also be used as an enema. Crushed leaves may be put into the nostrils for the relief of headaches or placed under the bedding of someone who suffers from breathing problems. For flu's and respiratory infections make a tea by mixing this plant together with yarrow and ginger, add honey to taste.

External:

- Use the leaf tea as a compress (dip cotton or a cloth pad into the liquid tea and apply to the affected area of skin). One can use safety pins to secure the compress for up till 1 hour on skin.

WARNING

Mint is safe for everyday use.



Moringa

Drum stick, Horse radish tree, Mupulanga, Zakalanda (Tonga, Zimbabwe)

Moringa oleifera Family: Moringaceae

Origin: North-west India. Cultivated throughout the world, particularly where malnutrition occurs.

Description and cultivation: A small-medium-sized shrubby tree. Propagated from seed and cuttings, cultivated in marginal soil in full sun, with very little water required, frost sensitive, established trees will die back in winter to grow up to 4 m in a year. Coppiced to yield more leaf and seed pods within 8 months.

Permaculture: Moringa is a legume with a soil improving action, shows impressive potential as a famine food and for bio-diesel. The twigs and leaves can be lopped for stock fodder.

Parts used: Seed pods, seed, seed oil and gum.

Medicinal Action: Purgative, causes vomiting, antibiotic.

Uses:

Internal:

- Leaf juice is used to stabilize blood pressure and blood sugar and to treat anxiety. Leaf juice, sometimes with carrot juice added, used to increase urine flow.
- Leaves mixed with honey are used as a remedy for diarrhoea, dysentery and colitis (inflammation of the colon). Leaves are eaten to treat gonorrhoea.
- Eating leaves is believed to increase a woman's milk production and for anaemia.
- Flower tea is used to promote urination and bile flow, as a tonic and expels worms. A combination of flowers and leaf will clear infections of the chest and throat and expel worms.
- Pods are used in diseases of the liver and spleen, in treating pain in the joints and expelling worms.
- Seed oil is taken for gout and rheumatism
- Gum infusions used in treating fevers, dysentery, asthma, syphilis, rheumatism and for dental care.

Nutrition:

Moringa leaf contains 7 times the Vitamin C of oranges, 4 times the Calcium of milk, 4 times Vitamin A of carrots, 3 times the Potassium of bananas and 2 times the protein of yoghurt. Tests have found that by taking Moringa leaf powder as a supplement, children maintained or increased their weight. Pregnant women taking SMALL doses of *Moringa* recovered from anaemia quickly and had babies with higher birth weights. The bulbous root can be grated and fried or pickled in vinegar as a supplement for horse radish.

External:

- Leaf is used as a poultice to reduce glandular swelling. Leaves and young buds are crushed then rubbed on the temple for headache relief.
- Flowers and leaf are crushed and applied directly to areas affected by acne, blackheads and fungal infections. Infusions can be used as a cleansing face rinse.

- Seed oil is rubbed on areas affected by rheumatism to alleviate pain.
- Gum infusions are applied to areas effected by fungal infections.

Preparation:

- The leaf and young seed pods can be harvested at any time; the leaf is eaten raw or dried for future use, young seed pods are cooked as relish. The mature seeds may be harvested when the seed pod splits. The gum is collected from cutting the stem.
- A cup of leaf and or flowers is infused in 1 cup boiling water for 5 minutes, strained and sipped 3 times daily or used externally as wound cleaning and face cleanser.

WATER TREATMENT:

To treat 20 liters of water: Remove the shells from mature *Moringa* seeds and crush the white kernels in a mortar until a fine powder is obtained. Do not use discolored seeds. Add 2 g (2 teaspoons) of powder to a cup of clean water and shake for five minutes in order to activate the chemicals in the powder. Filter this solution through a clean cloth into the bucket of water to be treated. Stir the bucket rapidly for 2 minutes, then slowly for 10-15 minutes. Leave the bucket to sit without being disturbed. After one hour, the solid particles in the water will have settled.

WARNING

Overdose of *Moringa* can cause abortion-pregnant women should only eat the fresh or dried leaf in small proportions.

Large doses of *Moringa* depress the central nervous system, resulting in significant muscle



Infections, high blood pressure

Wild Olive

Motholoari. (Sotho), Umquma. (Xhosa, Zulu), Olienhout (Afrikaans)

Olea europea. subs. africana Family: Oleaceae

Origin: Indigenous to South Africa (including the central part of Limpopo Province). The wild olive has small fruits and is closely related to the commercial olive with larger fruits.

Description and cultivation: Olive is a small-medium evergreen tree 5-18m, long lived (up to 700 years). Propagated from cuttings. Easily recognized by irregular trunk, opposite leaves are dark green on top and silver below. Although frost-hardy, fruit needs hot summers to ripen. Small white flowers produce a dark-red to black fruit (Olive), the European cultivar should yield fruit in 4-6 years.

Permaculture: As it is used frequently as a medicine one olive tree should be planted in Zone 1 near the house. Keep in mind that although it grows slowly, in time Olive gets big and will cast dense shade.

Parts used: Fresh or dried leaves (*Olea europea* sub species *africana*). Fruit and oil (*Olea europea* or commercial olive).

Medicinal Action: Antibiotic, reduces blood pressure, reduces fever, antispasmodic (leaf), stimulates bile and mild laxative (oil).

Uses:

Internal:

- Leaf infusions are antibiotic, lower blood pressure, promote urination, enhance renal function and blood circulation to the hands, feet and penis (improves staying power).
- Along with its effectiveness against pneumonia, sore throats, ear infections, colds and flu, the leaf alleviates the symptoms of colic and diarrhoea.
- Both the leaf and oil have positive effect on low blood sugar imbalance in the body and expel worms from the gut.
- Oil is advised as a daily nutritive and dietary supplement high in Omega 3

External:

- An eye lotion is made from leaf infusion.

Other:

- Olives are good shelter, shade and fruit trees. Cuttings of *Olea europea* cultivar can be grafted onto established *Olea europea subs. africana* to bear fruit.

Preparation:

- Leaf can be simply eaten, 1-2 leaves daily
- Leaf infusions are made with 5 leaves to 1 cup boiling water,
- Oil can be added to food daily, 15-30ml (1 - 2 tablespoons) daily.
- Oil can be applied externally to prevent bedsores.
- Oil is used as lubricants for enemas, suppositories and vaginal inserts.

WARNING

Olive leaf can be taken once daily, but must be stopped at first signs of laxative action.



Antibiotic, immune stimulant

Umckaloabo

Umckaloabo (German); ishaqa (Zulu); malva (Afrikaans)

Pelargonium sidiodes Family: Geraniaceae

Origin: South Africa.

Description and cultivation: Small perennial herb with root tubers, silky round heart-shape leaves, with tube-like flowers that are dark-maroon to black. Plant at a depth of 10 cm (4 fingers) in well-composted soil with good drainage, cover with soil, press down lightly and mulch well. Ishaqa is drought resistant but can be watered 2 times weekly, tolerates heavy frost and is grown in Gauteng.

Permaculture: All *Pelargonium*'s are effective insect-repellent plants, there is also a large potential for commercial cultivation of Ishaqa as a medicine and essential oil. This plant is protected under CITES and exportation permits are needed from your local Department of Environmental Affairs and Conservation.

Parts used: Fleshy roots, fresh or dried.

Medicinal Action: Antibiotic, immune stimulant (van Wyk and Wink, 2004).

Uses:

Internal:

- Ishaqa root can be chewed raw and is beneficial in aiding ear, nose and throat infections, also pneumonia, bronchitis, sinusitis, tonsillitis and is suitable for use in children and infants.
- The root can be grated 10ml (2 teaspoons) and infused in 250ml (1 cup) boiling water, cooled, strained and sipped for rapid relief of diarrhoea, dysentery, feeling of weakness and treatment of gonorrhoea.
- Ishaqa is an effective supportive treatment of TB and chronic bronchitis.



Tonic, treating infections, mood

Rosemary

Roosmaryn (Afrikaans)

Rosmarinus officinalis Family: Lamiaceae

Origin: Mediterranean

Description and cultivation: An aromatic (strong smelling) evergreen shrub that grows about 1 m tall. It bears characteristic small narrow matchstick-shaped leaves. Small blue-purple flowers occur. The plant prefers a warm and fairly dry, sheltered site. Grow from seed or cuttings in Spring.

Permaculture: Can be used as a low hedge (secondary windbreak). Also could act as an insect pest barrier- repels bean beetles, cabbage moths, carrot flies (Bird, 1990). Attracts bees. Good companion for brassicas (cabbage, cauliflower, broccoli), beans and carrot. (Bird, 1990). Is a bad companion for potato (Bird, 1990).

Parts used: Leaves and young shoots.

Medicinal Action: General tonic, antimicrobial (van Wyk and Wink, 2004).

Uses:

Internal:

- It is a stimulating tonic herb; it increases circulation to the head improving concentration.
- It is also useful in treating epilepsy, recovering from long-term stress and mild depression.
- It is used to treat stomach cramps, gas, as well as to stimulate the appetite and the secretion of gastric juices.
- It is also considered to be detoxifying.
- Owing to its anti-microbial properties it is used to treat infections.

External:

- In bath or ointment form it is used to provide relief from muscle aches and joint pains

Culinary:

- Helps to break down fat-add to stews and roasts. Rosemary has many vitamins and minerals e.g. Zinc and Potassium.

Cosmetic:

- Rosemary tea can be used as a hair rinse to encourage a healthy scalp and strong hair.

Preparation:

The branches are gathered during the Summer after flowering and dried in the shade. Teas are made by adding 1 teaspoon of the crumbled leaves to 1 cup boiling water. For use as a tonic, drink 1-2 cups a day between the main meals or after breakfast. Use this dose for 15 days then break for 10 days. 50 ml of tea can be taken every 3 hours for headache. In cases of viral infection use 3 cups a day for 7 days. Remember to eat yoghurt while taking anti-bacterial plants like rosemary to put back good intestinal bacteria.

WARNING

- Do not use during pregnancy.
- Large doses are poisonous.



Respiratory, anti-inflammatory

African Ginger

Wild ginger, serakulu, sipiphepheto (Sotho), isipiphepheto, indungulo (Zulu)

Siphonochilus aethiopicus Family: Zingiberaceae

Origin: Southern tropical Africa from Kwa-Zulu Natal to southern Malawi.

Description and cultivation: This deciduous plant has cone-shaped rhizomes with long tendril roots with a very similar smell and leaves to ginger (*Zingiber officinale*). Produces a beautiful pink flower in early Summer to late December.

The plant is cultivated from the cone-shaped rhizomes planted 10 cm (4 fingers) deep into well dug, composted soil with good drainage, covered with mulch and watered well twice weekly. The root can be harvested from the rhizome when the flowers begin to die off; the rhizome is then replanted.

Permaculture: This is a high value medicinal crop with great potential for the future; it can be intercropped in an orchard. Commercially grow like potatoes they suffer from nematode problems and have to be rotated to other fields (Mander pers comm).

Parts used: Root and rhizome.

Medicinal Action: Anti-inflammatory, opens lungs (van Wyk and Wink, 2004).

Uses:

Internal:

- Fresh root is used to alleviate malaria, oral and vaginal thrush, fever, headache, colds, respiratory infections (including sinusitis, asthma, coughs), menstrual disorders.

External:

- Chewed root or strong tea applied to fungal infections

Preparation:

- Fresh root is chewed for relief from coughs, colds (to clear nasal passages), asthma, influenza and a tight chest.
- Fresh root 15 ml (3 teaspoons) can be chewed or 5 ml (1 teaspoons) dried and powdered can be taken in 250ml (1 cup) cold water three times daily for relief from malaria, oral and vaginal thrush (*Candidia albicans*), fever and headaches.

WARNING

This is a traditional medicine and clinical studies have yet to establish interactions with ART.



Nettle

Stinging nettle; bobatsi (Sotho), imbabazane (U. urens-Zulu);
brandnetel (Afrikaans)

Urtica dioica Family: Urticaceae

Origin: Europe and Asia. Another species, *Urtica urens* originates in the entire northern hemisphere (Europe, Asia and North America). Both types of nettle are global weeds. The Romans brought it to Britain to treat rheumatism related to the cold, damp climate.

Description and cultivation: This hardy perennial is one of those plants you will never forget, especially if you walk into it! Nettle actually means needle, this describes the hairy leaves that are full of acids (*Urtica* means to burn). Nettle can be grown from seed or by root division (remember to wear gloves). It prefers well-dug, compost rich soil with good drainage. Plant in the full sun and water 2 times weekly.

Permaculture: Make a spray out of nettle to repel aphids and mildew. Put nettle in a bucket to rot and use as liquid fertilizer. Cut leaves and add to compost as an activator. Plant near peppermint, sage and thyme as it will improve their oil content. Nettles is a companion to tomatoes, potatoes and horseradish.

Parts used: Whole plant, leaves and roots

Medicinal Action: Anti-rheumatic, urological (van Wyk and Wink, 2004).

Uses:

Internal:

- The leaves are steamed as a marog (spinach), very high in minerals and vitamins.
- Treatment of rheumatism, urinary infections (van Wyk and Wink, 2004), hay fever, asthma, eczema, anaemia.
- Improving breast milk in nursing mothers.
- Preventing kidney stones and relief from enlarged prostate (van Wyk and Wink, 2004).
- *Urtica* said to be beneficial for PLWHA on ART (detoxify the liver and boost the immune system).

External: Fresh leaves applied to arthritic and rheumatic joints to reduce inflammation.

Preparation:

- A daily dose of 8 -10 grams (1 teaspoon) leaf is dried and powdered, infused in 1 cup boiling water, cooled, strained and sipped. Take once daily for 7 days then stop for 7 days for the treatment of hay fever, asthma, eczema, anaemia and improve breast milk in nursing mothers.
- An infusion of *Urtica* is a very good to purify the blood, expel kidney stones, and for infertility, jaundice and inflammation; take 3 times daily for 10 days, then stop for 4 days .

WARNING

Little is known about interactions with Anti-Retroviral Therapy (ART).

It makes you urinate so remember to drink plenty of water (2 litres/8 cups) daily

Wear gloves, long sleeves, pants and shoes when handling this plant.



Respiratory, expelling phlegm

Mullein

Orange mullein (English); koningskruid, fakkelkruid (Afrikaans)

Verbascum phlomoides Family: Scrophulariaceae

Origin: Central, eastern and southern Europe, Asia Minor and North Africa. Grown commercially in Egypt and Eastern Europe.

Description and cultivation: Biennial herb with grey-green hairy leaves and tall stalks (1,5m high) with yellow flowers appearing in the second year. Grown from tiny black seed in spring, in well-dug, rich composted soil with good drainage. Keep moist through germination, transplant then when they are about 15cm, plant out into garden, remembering to water 2 times weekly. When the plant dies back, just up-root it and throw it down where you would like it to grow next season. Relatively drought hardy and is able to handle heavy frost.

Permaculture: Makes an attractive addition to the garden, supplying bees with valuable nectar. Plant with carrots, potatoes, beetroot, spinach and lettuce.

Parts used: Leaves and flowers.

Medicinal Action: Expels mucous, promotes urination (van Wyk and Wink, 2004).

Uses:

Internal:

- Flowers can be added to salads and eaten raw.
- Flowers or leaf tea used for TB, bronchitis, pneumonia, influenza, asthma, coughs, tight chest, sore throat, earache, blocked noses and any lung condition where there is mucous.
- Flower or leaf infusions can be drunk as a blood purifier for kidney, bladder problems by helping you pass urine and for people suffering from haemorrhoids, inflammation and viral infections.
- Dried leaf can be smoked as a tobacco substitute and for treating lung problems including a tight chest or asthma.

External:

- Flower or leaf infusions can be used as a wound wash for sores and boils.

Preparation:

3 -4 g of flowers or leaves can be used daily as a teas (1g per 150ml boiling water) for treating TB, bronchitis, pneumonia, influenza, asthma, coughs, tight chest, sore throat, earache, blocked noses and any lung condition where there is mucus problems.

WARNINGS

- Little is known about interactions with Anti-Retroviral Therapy (ART).
- It promotes urination so drink plenty of water (2 litres/8 cups daily).



Fevers, treating infections

Isibaha

Pepperbark; molaka (Sotho); isibaha (Zulu); mulanga, manaka (Venda); shibaha (Tsonga); peperbasboom (Afrikaans)

Warburgia salutaris Family: Canellaceae

Origin: Southern Africa. Grows wild in northern Kwa Zulu Natal and the wetter parts of Limpopo and Zimbabwe.

Description and cultivation: An evergreen tree up to 20 m in height., with small greenish-yellow flowers and shiny leaves which have a strong peppery smell. It does not withstand frost and drought very well. Grown from softwood cuttings (100mm long) taken in the warmer months. Strip off all leaves except the top three. Dip in rooting hormone (e.g. Seradix), plant in riversand and don't let it dry out. When roots have formed plant into bags with 3:1 riversand and compost if it is hot and wet. It can be grown from seeds at the end of summer but good seed is hard to find as it is usually damaged by wasps. Likes a warm, wet climate (where it can grow 900 mm/year) but can be grown in cold areas if protected. (Venter and Venter, 2002). THIS TREE IS RARE AND NEEDS TO BE CONSERVED. DON'T HARVEST BARK-USE THE LEAVES.

Permaculture: This is a forest tree (misty forest or sandveld forest). It will grow better if planted under existing trees or in existing vegetation. In frost areas this will some provide protection. It likes plenty of water and could be planted in a swale or next to a mulch pit. Note that it won't like sticky clay soil. It can be planted as a zone 2 or zone 3 crop, kept small and plucked like tea bushes. The leaves can be used to make a spray for pests.

Parts used: Bark (not recommended for conservation reasons) and sometimes the leaves. All parts have a peppery taste.

Medicinal Action: Antibiotic, general tonic (van Wyk and Wink, 2004).

Uses:

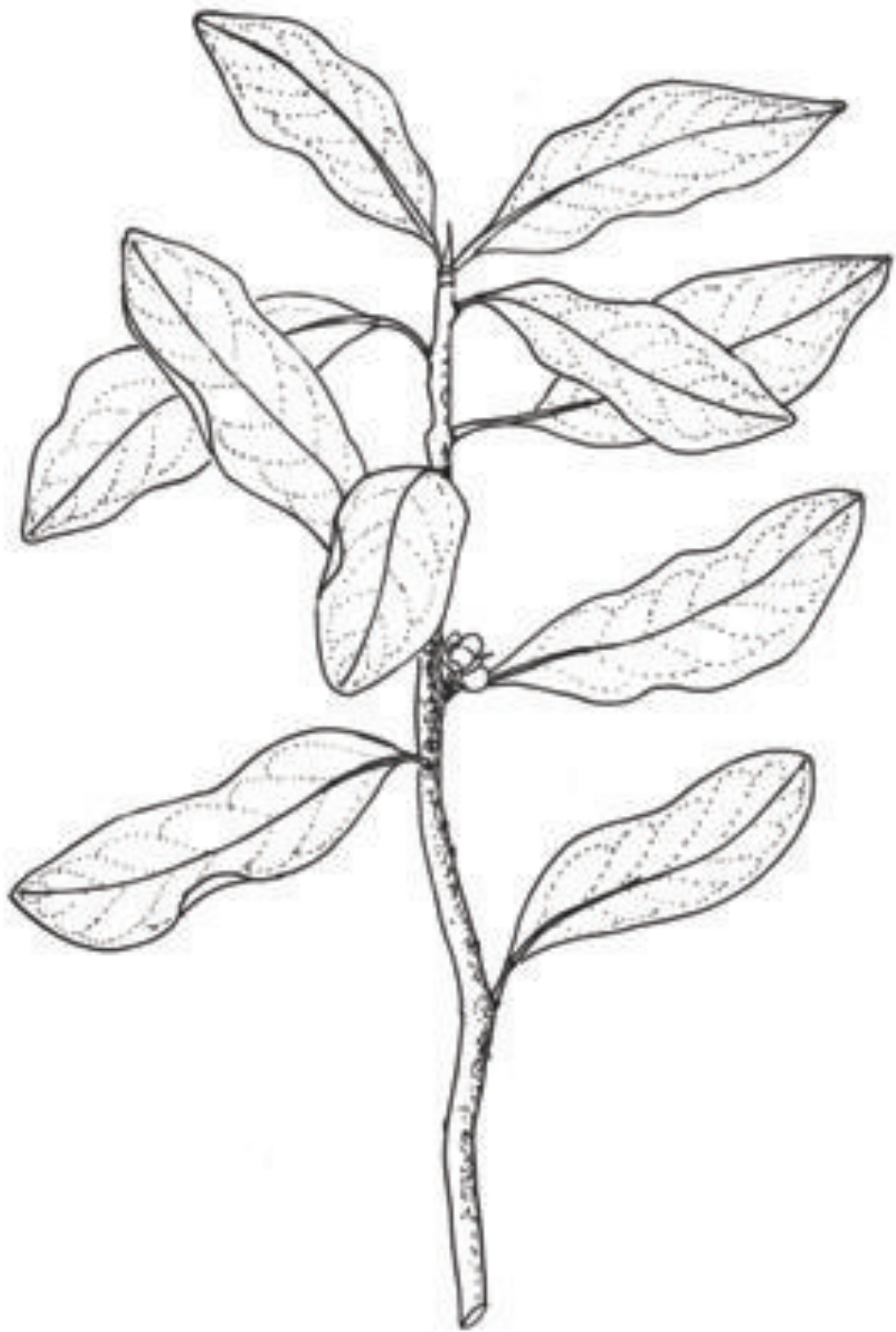
A pinch of the powdered bark is taken in a spoonful of cold water or smoked for a dry cough. Powdered bark is taken with cold water, or made into a tea or decoction for fever, malaria, colds, flu, coughs, and chest infections productive of purulent sputum, for abdominal pain, constipation and for venereal diseases. It has also been used for cancer, rheumatism, stomach ulcers as well as an aphrodisiac. A weak tea is also useful in controlling oral candidiasis (thrush), though causes some short-lived irritation.

Preparation:

For treating infections take nearly half a gram of the powdered bark. Prepare by adding 1 tablespoon powdered bark to 1 litre water and boiling it for 30 minutes. Drink half a cup/day. It is normally drunk hot. More than this can be dangerous. A weaker tea can be made from chopping 2 fresh leaves and adding to 250ml boiling water. Take hot.

WARNING

Warburgia should never be taken during pregnancy. It has been used to cause abortion. It has toxic properties, thus *Warburgia* should be used carefully in small doses.



Adaptogen (Tonic), wound healing

Bofepha

winter cherry (English); Ashwaganda (Indian); ubuvimba (Zulu); ubuvuma (Xhosa); bofepha (Sotho); geneesblaarbossie (Afrikaans)

Withania somnifera Family: Solanaceae

Origin: Grows naturally in Africa, southern Europe, Asia. Might have been brought from India where it is cultivated for Ayurvedic medicine.

Description and cultivation: Small perennial shrub of up to 1 m. It has velvety stems and leaves and bright orange-red berries that are enclosed in papery “bags.” It is considered a weed, growing in disturbed ground, often found growing between rocks on koppies. Grow from seed. The plant likes deep sandy soils in full sun

Permaculture: Low maintenance plant-grows as a weed all over South Africa, except the Kalahari. Plant it where it can self-seed.

Used as “sacrifice plant” for interplanting with potatoes as the Colorado beetles prefer it.

Parts used: Leaves (harvest Spring) and soft outer root bark (harvest Autumn)

Medicinal Action: Sedative, adaptogenic (tonic)-roots, wound healing (leaves) (van Wyk and Wink, 2004) and immune stimulant.

Uses:

Internal:

- The roots are used for fevers, colds and flu’s, asthma, general ill health and weakness, infections, syphilis, diarrhoea, typhoid, worms, and as a sedative (van Wyk and Gericke, 2000).
- Taken as an aphrodisiac (increaser of sex drive) (van Wyk and Gericke, 2000).
- Reduces anxiety and mild/moderate depression (van Wyk and Gericke, 2000).
- Used as a brain tonic for all ages, especially the elderly (van Wyk and Gericke, 2000).
- Also shown to fight tumours, lower cholesterol and be anti-inflammatory.

External:

- A paste of leaves is used on sores and wounds, rheumatism, inflammation and venereal diseases (van Wyk and Wink, 2004).

Preparation:

Internal:

- The recommended daily intake is 3-6 grams (1-2 teaspoons) of ground root bark taken with water.
- Fresh roots are prepared as teas, strong tea or alcohol tinctures For older roots use the soft outer bark.

External:

- Make paste of leaves, or use the leaves as a poultice.
- Make ointments with fat or oil.

WARNING

- Don’t eat the berries-they can be toxic.
- Don’t take with sleeping tablets or tranquilizers as the plant will increase the effect of these depressant drugs. Causes drowsiness so do not use when operating machinery or driving.



Oral hygiene, anti-inflammatory

Monokwane

Small knobwood, Monokwane (Sotho), Umnungamabele (Zulu),
Umlungumabele (Xhosa), Kleinperdepram (Afrikaans)

Zanthoxylum capense Family: Rutaceae

Origin: Indigenous, grows naturally in warmer, wetter areas from the Western Cape to Zimbabwe.

Description and cultivation: Usually a small multi branched deciduous tree 5 – 7m, up to 15 m. Easy to recognize from sharp, single, reddish thorns on stems which grow into woody knobs (which look like pointy breasts). Also the leaves and fruit have a strong lemon smell (Johnson and Johnson, 2002). Usually cultivated by lifting young seedlings from under trees in the bush (be sure to lift only 3 seedlings-leave some seedlings to replace the wild tree). Can be grown from fresh seed-soak first in dilute acid (hydrochloric, sulphuric) and then overnight in hot water. Sow in mixture of equal parts river sand and compost. Don't be surprised if germination is poor. Transplant at two-leaf stage. Grows fast (~0.7m/year) and will tolerate some drought and frost (Venter and Venter, 2002).

Permaculture: Male and female flowers are on separate trees - plant 3 – 5 young trees together. Produces fruit after about 3 years (Johnson and Johnson, 2002). Monokwane needs little attention if there is enough rainfall (over 700mm). Thus it is suitable for Zone 5 (e.g. dry or evergreen woodland), especially in rocky places. However it can be grown in Zones 1 – 4 as the roots are not aggressive. The fruit will attract birds and butterflies and can even be grown in a large pot close to Zone 0 (e.g. the house).

Parts used: Root, leaves, fruit and bark.

Medicinal Action: Oral hygiene (anti-plaque), anti-inflammatory.

Uses:

Traditionally used for colic with gas, stomach ache, fever, toothache and as a mouthwash (van Wyk et al, 2000), as well as ingredient in worm remedies and imbhizas (blood purifiers) (Hutchings et al, 1996).

Preparation:

- Remove the bark from the end of a twig, and then beat or chew it to make a toothbrush (van Wyk and Gericke, 2000).
- Powdered Bark: 10 grams (4 teaspoons) boiled in 1 litre for 20 minutes is used for toothache. A weaker tea is a mouthwash which will bind to dental plaque and kill bacteria.
- Monokwane mouthwash: The green fruit (3-4 teaspoons (van Wyk et al, 2000)) are lightly crushed and left to soak in cane spirits (750 ml bottle) (Johnson and Johnson, 2002). A third of a tot of this "gin" can be added to a glass of water and used as a mouthwash.
- Leaf or fruit: 1 teaspoon crushed, is make tea with 1 cup boiling water, cooled (5 minutes), strained and sipped for relief from fever, stomach ache and flatulent colic.

WARNINGS

Little is known about how this traditional plant reacts with other drugs (e.g. ART)



Ginger

Ginger (English); Gemmer (Afrikaans)

Zingiber officinale Family: Zingiberaceae

Origin: Probably northeastern India. Ginger is not found in the wild, and is an ancient cultivated plant. (van Wyk and Wink, 2004).

Description and cultivation: Ginger is a perennial with long fronds about 1 m high. The fronds have smaller leaves and grow from a branched rhizome (a stem that grows along the ground). The rhizome is easy to recognize as it can be seen above the soil and has a strong ginger smell. Ginger is grown from pieces of rhizome because the flowers are sterile.

Permaculture: Similar plants (*Hedychium sp*) from the Ginger family are serious weeds in wet areas. Make sure that you are planting the real medicinal ginger which has a strong ginger smell, and flowers with 3 yellow petals and a purplish lip-like structure. Real ginger can also be invasive in damp areas.

Parts used: Fresh or dried rhizome (“root”).

Medicinal Action: Prevents nausea, promotes digestion, (including stimulating bile and reducing gas), stimulant, anti-septic, anti-parasitic, immune-stimulant, lowers blood sugar and cholesterol (van Wyk and Wink, 2004).

Uses:

A very useful and cheap medicinal plant.

- A tea from the rhizome is used to treat fevers (promotes sweating) (Hoffman, 1991).
- Also used for viral infection or respiratory infections such as colds, flu’s and bronchitis.
- Used to treat nausea (including motion-sickness and morning sickness) indigestion, gas digestive infections. (van Wyk and Wink, 2004) (70% success for people with bacillary dysentery).
- Used to stimulate circulation to the head, feet, and hands (including treating chilblains).
- Used to distribute other medicines to the body, as it promotes digestion and circulation.
- Used during early stages of liver cirrhosis (Farooqi, 2001).

Preparation:

The rhizomes (‘roots’) are harvested when the leaves have dried up. Clean and dry in the sun. (Hoffman, 1991).

Tea: add boiling water to 1 teaspoon fresh rhizome, grated or sliced thin.

Strong tea: Boil one and a half teaspoons in one cup of water for 5 – 10 minutes.

Five to ten drops of Jamaica Ginger is added to a glass of water.

Add to foods (meat dishes or curries) as a spice. A daily dose of one teaspoon is safe.

WARNING

- Can cause heartburn if taken in large quantities (Wildwood, 2003).
- Not recommended for people taking anti-coagulants (blood thinning medicines).
- Don’t use if you have gallstones.
- To be safe, don’t use continuously during pregnancy.



Papaya

Paw paw (Sotho), papaja (Afrikaans)

Carica papaya Family: Caricaceae

Origin: Originating in Tropical Americas, cultivated globally as a fruit crop.

Description and cultivation: A small erect tree with spongy trunk and milky sap, Grown from seed by sowing many seed in a bag or pot filled with well-composted soil with good drainage. Planted out when 20cm high (four-leaf stage). Plant in late summer.

Parts used: Leaf, milky sap (latex), fruits, seeds and skin.

Permaculture: Good for planting around mulch pits. Compost and mulch well (but leave a gap around the trunk).

Medicinal action: Digestive, wound healing, expels worms; cultivated fruit, meat tenderizer.

Uses:

Internal:

- Various parts of the Papaya are used to treat anemia, colic, syphilis, rheumatism, gout and various fevers.
- The milky sap aids with digestion of fat and protein. It also helps the liver to function properly. This is beneficial to diabetics and people living with HIV-AIDS (PLWA).
- Regular eating of Papaya is said to remove worms from the small intestine and colon.
- The seed is used as a treatment for rheumatism, gout, fevers and worms.
- The leaf has been used as an aid to digestion

External:

- The latex is applied directly to treat festering wounds as a cleaning agent.
- The skins are applied as a dressing to pressure sores (bed sores).

Other:

Use papaya skins as a meat tenderizer to make meat easier to digest for PLWA

Preparation:

- A piece of leaf the size of a R2 coin can be eaten for daily for digestion.
- Latex for intestinal worms: Collect 15 -20ml (3-4 teaspoons) latex. Mix with equal amount of honey or sugar and stir it into a cup of hot water.
- Latex can be applied directly on wounds: First clean and wash out the pressure sore that has dead flesh in it. Then soak a sterile cloth or gauze with latex and pack into the wound.
- Repeat cleaning and repacking three times daily
- Fruit can be eaten liberally for good health.
- Seed can be dried and powdered, take 15ml (three teaspoons) in 400ml (one cup) with 15ml (one teaspoon) honey three times daily for seven days.
- Skin is used for pressure sores as a dressing; it loosens up dead flesh for wound cleaning.

WARNING

Be careful if pregnant, the seeds and latex cause abortion in large dosages.
Some people have a skin reaction to the milky sap.

Antimicrobial, digestive

Lemon

Suurlemoen (Afrikaans)

Citrus limon Family: Rutaceae

Origin: Southern and southeast Asia, cultivated globally in warmer areas (Although seen growing in Lesotho at 2500m!).

Description and cultivation: Small evergreen tree (6m), easily recognisable with purple-tinged white flowers and yellow fruit. The plant is cultivated from root stock and grafts.

Parts used: Fruit, fruit peel and oil from outer peel.

Medicinal Action: Promotes digestion and circulation, antiseptic, promotes urination, anti-inflammatory, decongestant (van Wyk and Wink, 2004).

Permaculture: Plant at least one lemon tree near your kitchen door (Zone 1) for easy access. Boil peels of 4 large or 8 small lemons in a litre of water for 10 minutes to make a spray for whitefly and other soft-bodied insects. (Nancarrow and Hogan Taylor, 2000) including army worms and boll worms (Bird, 1990).

Uses:

Internal:

- Used in treatment of asthma, liver complaints, TB, gout, rheumatism, nausea, indigestion, influenza, dry coughs and sore throats. Lemon juice helps slow down insulin reactions making it beneficial for diabetics and people living with HIV/AIDS.
- Lemon juice is used to treat excessive menstruation, hot flushes and uterine fibroids and as a douche for vaginal discharges (see below).
- Excessive sexual drive is said to be reduced by taking lemon juice.

External:

- Juice is used undiluted as an antiseptic for wounds, acne and fungal infections.
- Lemon peel is bound over warts or verrucas until they disappear (Hoffman, 1991).

Preparation:

- For treatment of asthma, liver complaints, TB, gout, rheumatism, nausea, indigestion, influenza simply squeeze half a lemon in 400ml (1 cup) water.
- To make a cough mixture: Mix 5ml (1 teaspoon) lemon juice and 5ml (1 teaspoon) honey in a 100ml (half cup) warm water to form a cough syrup. Children under one year should not have honey, replace with 5ml (1 teaspoon) sugar.
- Fresh juice may be gargled for sore throat or for oral hygiene.
- Vaginal douche, use 30ml (six teaspoons) of lemon juice in litre of clean water. (If you have no lemons see: *Allium sativum* (Garlic page 32) for vaginal insert).
- Squeezed lemons can be used as an under-arm deodorant or to clean cooking surfaces.
- Lemon juice added to your rinsing water will get rid of oily residue.
- To remove stains (ink/rust/fruit) rub affected area with lemon juice and leave in the sun.
- The rind can be grated into food or chopped up and added to baking to improve digestion.
- For anaemia prevention place some steel nails in lemon juice for a few hours, make lemonade with the juice and drink.

Nutrition, Immune system support

Pumpkin

Mokopu (Sotho), Pampoen (Afrikaans)

Cucurbita pepo Family: Cucurbitaceae

Origin: South and Central America, now cultivated globally

Description and cultivation: A creeping annual herb, with hairy leaves, funnel-shaped yellow flowers and a large multi-colored fruit with many seeds inside. Pumpkin is a heavy feeder, sow seed in spring, into a well dug, compost-rich soil with good drainage. The leaves can be harvested at any time; the fruit matures well and can be stored.

Parts used: Whole plant, root, leaves, flowers, fruit and seed.

Permaculture: Pumpkins are traditionally planted with maize and beans, the bean give nitrogen to the maize, climbing up the stalks when maize matures, and the pumpkin shades out weeds. Pumpkins will grow well in mulch pits with some well-rotted manure added.

Medicinal Action: Enlarged prostate, promotes urination (van Wyk and Wink, 2004).

Uses:

Internal:

- Pumpkin leaf, flower and fruit can be eaten as added nutrition.
- Seeds are eaten as a source of Zinc, Calcium, Iron, Magnesium and B vitamins which are needed for a healthy immune system.
- Seeds are used to support sexual function in men. (Every time men have sex they loose zinc).
- Seed is used to provide symptomatic relief from enlarged prostate (Old Man's Disease)

External:

- Leaves are boiled, when cool are used as a compress on the chest for pneumonia.

Preparation:

- Seed is roasted, then ground and eaten (15 g /3 teaspoons daily) to kill tapeworm.
- Root (1/4 cup) is infused in 250ml (1 cup) boiling water, cooled (5 min), strained and sipped for relief from rheumatism.

WARNING

See a Doctor if you have enlarged prostate to check that it is not malignant (cancerous). Cancer of the prostate can be fatal.

Digestion, colds and flu

Lemongrass

Cymbopogon citratus Family: Poaceae

Origin: Unknown, but possibly southern India and the island of Sri Lanka. It is now grown commercially world wide, even in frost areas.

Description and cultivation: Perennial grass with sturdy stems and broad aromatic leaves.

Parts used: Stalks, leaves, roots and oil.

Medicinal Action: Mild sedative, promotes appetite and digestion, reduces gas, expels mucous and antimicrobial (van Wyk and Wink, 2004).

Uses:

Internal:

- The stalk and leaves are used for easing symptoms of colds and flu such as a dry cough and runny nose.
- They are also used to give relief from stomach-ache, flatulence and digestive disorders (including digestive symptoms of HIV-AIDS infection).
- The oil has antibacterial and antifungal properties.

Cosmetic:

- Lemongrass tea can be used to cleanse oily skin (Hoffman, 1991).

Preparation:

- 3-4 stalks are roasted and boiled in 1 litre water (with salt to taste), and drunk three times daily to relieve dry cough and runny nose. This decoction also eases difficult urination.
- Slice a stalk and boil with 500ml water, this decoction can be drunk or added to food to increase urination and ease indigestion.
- Stalk and root are cut into 10cm pieces and boiled in 750 ml (3 cups) water with salt; the mixture is reduced to 250 ml (1 cup). Drink to relieve stomach-ache and gas build-up.
- Root is sliced and roasted until dry, and then boiling water is added. Drink 75ml (five tablespoons) three times daily for relief from urination difficulty.
- The oil is extracted through steam distillation.

WARNING

Lemongrass is safe if used to flavour food or as a tea. However in a concentrated form such as essential oil it can be toxic or even fatal if taken internally (van Wyk and Wink, 2004).

Honey

Mamepe (Sotho), Heuning (Afrikaans)

Apis mellifera scutella (African honey bee), *A. m. capensis* (Cape bee)

Family: Apidae (of the Order Insecta)

Origin: Beekeeping is an indigenous African practice, and is practised commercially in all tropical and temperate areas. The First Peoples of South Africa, such as the San (Bushmen), have used wild honey for thousands of years, though they do not practice beekeeping.

Description and cultivation: Honey is a combination of bee enzymes and flower nectar. It is one of the oldest medicines known to humankind. Wild bees are collected by hanging a clean cardboard boxes with a small hole in areas where they swarm. Re-use the same box for capturing more swarms as it will now have a “bee smell” attractive to other swarms. African bees are aggressive, especially when it is hot (often beekeepers work at night or early morning). Wear protective gear and keep hives at least 100m away from homes (Zone 0) and animals. Note that bees that swarm when there are few plants in flower will be hungry and aggressive. Calm them with sugar water. (Marchand and Marchand-Mayne, 2003).

Parts used: Honey, beeswax and propolis.

Medicinal Action: Nutritive, Antimicrobial.

Uses:

Internal:

- In cases of dysentery, diarrhoea, nausea, vomiting and dehydration honey can be used as an oral re-hydration solution (ORS)
- Use honey in cases of gut infection such as: Salmonella, Shigella, E. coli and Cholera. It can be combined with tumeric (*Curcuma longa*) to increase the effect.
- Honey is also an effective cold, flu and tonsil remedy, especially for inflamed, dry coughs

External:

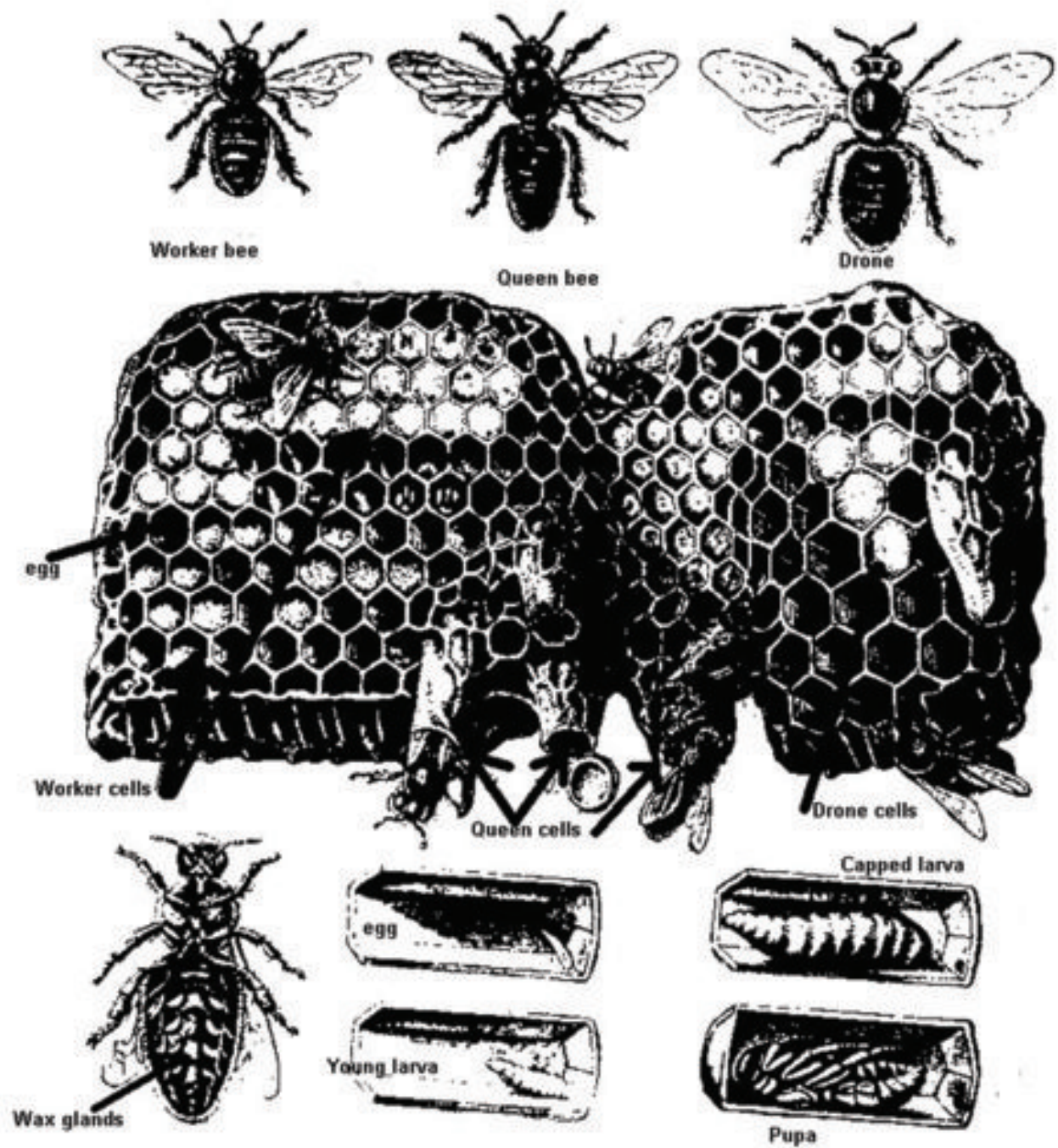
Honey is used topically as a wound healer in cases of Multiple Strain Resistant Staphylococcus aureus (MRSA) and Escherichia infections where biochemical antibiotics fail, by keeping the wound sterile and hastening the healing process

Preparation:

- To help relieve nausea: mix 5ml (1 teaspoon) honey and 2.5ml (1/2 teaspoon) ginger with 400ml (1 cup) water, drink 1-2 times daily.
- For gut infections mix 5ml (1 teaspoon) honey and 5ml (1 teaspoon) tumeric powder in 400ml (1 cup) water, drink 1-2 times daily.
- To make a cough mixture: Mix 5ml (1 teaspoon) honey and 5ml (1 teaspoon) lemon juice in a 100ml (1/4 cup) warm water to form a cough syrup.
- Honey can be applied liberally to wounds that have been cleaned with teas of Amaranth (*Amaranthus sp.* page 36)

WARNING

Honey should not be given to children under 1 years of age. Persons with diabetes or low blood sugar should use honey in small amounts, it is better to mix it with lemon juice which lowers the blood sugar.



From: Bees, Wasps and Ants by Rev Charles A. Hall

Methods for absorbing medicines into the body

There are different ways of applying various medicines. All through the centuries humans have experimented to find the best way of getting medicine to those parts of the body it is meant to have an effect on. As humans we have created applications to the skin, we have rubbed medicine into cuts, we have swallowed, sniffed, smoked, and have even put medicines up the anus (called an enema) – all in an attempt to find the best route.

Some medicines will be applied externally and other will be taken internally. For example, if one is suffering from a headache, and takes an aspirin, the drug must first be absorbed from the gut into the bloodstream and travel into the head before it can be effective. For reasons such as this, we have developed many different ways to take medicines into our systems where they can act as quickly as possible. Some medicines do not tolerate the stomach acid of the gut and should be taken by another means.

Medicinal preparations can be absorbed into the body in the following ways.

Orally:

This is the most common method used, and involves swallowing the medicine. There is a danger of poisoning if the dose is not accurate. Some medicines taken into the mouth are deliberately vomited out, this is known as phalaza, and is a common purification practice in South Africa.

Enema:

An enema is a medicine that is fed down a pipe or funnel into the anus where it is to be absorbed by the intestines directly into the blood. Enemas are used when a medicine is not well tolerated by the stomach or when it is affected negatively by stomach juices which break down chemicals. An enema is also used in patients that are too weak to eat or are vomiting.

Topically:

Ointments, salves and lotions are used externally, sometimes for muscle aches, for skin infections. It should be noted that many chemicals when applied to the skin will be absorbed directly into the body. Some plants such as peppermint cause a tingling sensation that stimulates the blood flow to an area to speed the healing process. These are known as counter-irritant medicines. Stinging nettles are used in this way to improve circulation in patients with arthritis.

Sublingually:

Sublingual administration refers to medicines that are chewed and spat out, or placed under the tongue. Sub means “under” and lingual refers to “the tongue.” When a medicine is placed under the tongue its chemicals can easily pass through the lining of the mouth which is rich in blood vessels. Medicines that are not well tolerated by the liver (e.g. Nitrate medicines for heart problems) are often taken by this route so they can bypass the liver.

Steaming:

Plants containing strong smelling, “volatile” oils, are placed in boiling water and the resulting steam is inhaled through the nose or the mouth. Often a blanket is placed over the head to trap the steam. This is useful for closed chests, blocked sinuses and respiratory tract infections, as the steam can quickly reach the affected area. It is also of benefit in certain skin conditions such as acne. It has a secondary cleansing action. The inhalation of warm water vapour (steam) can also stimulate the sweating out of toxins through the skin.

Smoking:

Smoke from burning plants are inhaled into the lungs and absorbed into the body in a similar way to cigarette smoking. This method can be used, with plants such as Lehorometso (Sotho) *Pellaea calomelanos* to interrupt the spasms associated with asthma (Hutchings, 1996).Plants are also smoked by traditional healers to produce trance states which allow them to communicate with the ancestors more easily.

Scarification:

Medicinal plants, sometimes in the form of ashes, are placed into small cuts made in the skin, these are often done as part of a ritual, but may also be used to introduce a medicine from a plant that would otherwise be too toxic to take into the body by other means. Sometimes the skin is lightly burnt instead of cutting, this causes a thinning of the skin and allows substances to pass more easily into the body. Scarification does however bring the risk of keloiding-large unsightly scars that keep growing.Keloiding is more common in dark-skinned people.

Snuffs:

Powders that are sniffed into the nostrils are rapidly absorbed into the blood stream. These powders are often used in conditions like epilepsy when the medicine is required to act rapidly. Twasas or initiates who are often prone to seizure, carry powders in small bottles worn around the neck for this purpose. There are also effective headache cures taken in this way, like Ishongwe (Zulu) *Xysmalobium undulatum* (Hutchings and Van Staden . J. Ethnopharmacology 43).

Preparations of Medicines

In South Africa bark, leaves, rhizomes (roots), bulbs, tubers, fruits and seeds are all used as medicine. All different parts of a plant carry different chemicals, or “active ingredients,” so it is therefore essential to make sure you are using the right part of that plant.

The plants are either used fresh or they are dried for later storage. Once medicinal plants have been dried they should not be exposed to light or heat as this will degrade them. They should be stored in a cool dark place. They are then measured into correct dosages for further processing.

Here are the most common ways in which medicines are prepared from plants.

Infusions (teas):

Two types exist, hot and cold. A hot infusion is made when wet or dry plant material is placed in boiling water that is removed from the heat source and allowed to stand for 10 minutes. The water-soluble chemicals are dissolved into water and a hot infusion results – like a cup of tea. With some plants heat can destroy some of the active ingredients. In this case cold water would be used and the plants will be left in the water usually overnight to create a cold water infusion. These medicines should be used the same day or they will ferment.

Decoctions (boiled):

A decoction is made when plant material is boiled to extract the active ingredients. The boiling time differs amongst different plants and may be anywhere from 10 minutes to 8 hours. Usually, if the plant part is very hard, as with barks, the cooking time is longer. Sometimes milk is used instead of water as it absorbs some of the oils and fats which do not dissolve easily in water. Medicines should not be cooked in aluminium pots, as aluminium can change the chemistry of a medicine. Aluminium is also toxic to the body in high amounts and is believed to be a cause in a number of diseases affecting the nervous system.

Mixtures:

These are liquid preparations where more than one plant is used. Traditional medicines are often complex mixtures of many plants that have properties or contain chemicals that work well together.

Tinctures:

A tincture is made when plant material is placed in alcohol (e.g. cane spirits - 42% alcohol or grain alcohol - up to 80% alcohol) and left to stand for up to three weeks in a dark warm place. Tinctures have an advantage as they extract the active ingredients, like fats and oils that are difficult to extract with water. Tinctures also extract the active ingredients that can be dissolved by water. Alcohol is also a preservative and ensures the medicine will not go off. This method is of great benefit in rural areas where people do not have access to refrigeration. Tinctures can be stored for a long time and kept till they are needed. This saves a lot of time as they do not need to be prepared on a daily basis. This adds real value as the medicines may be stored safely until they are sold.

Syrups:

Syrups are tinctures to which sugar or honey has been added. Sugar and honey has a preserving action and increases the shelf life of the medicine. They also improve the flavour of otherwise bitter or bad tasting medicines, just like the cough syrups one buys in the pharmacy.

Ointments and Salves:

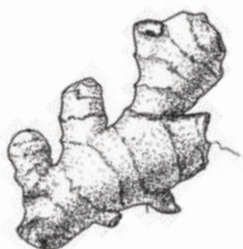
These are prepared by placing usually dry plant material into a heated oil or fat. Once the active ingredients are extracted into the fat, the plant material is separated by pouring the liquid through a sieve or a cloth. Traditionally fats from snakes, sheep, and other animals are used. These days many healers prepare their ointments in Vaseline. Bees wax is also a common addition to ointments.

Powders:

After drying, most medicines are ground down into a powder. These are then used in other preparations or can be taken directly, normally licked from the hand or sometimes sniffed into the sinuses as a snuff. They are also applied directly to open wounds, sometimes to control bleeding and to kill germs that might cause infection.

Juice:

The juice of certain plants is sometimes squeezed and applied directly to wounds or is taken orally. A commonly used juice in South Africa is the juice of the pigs ear, *Cotyledon orbiculata*, squeezed into the ears to control earache and infection.



Conservation of Medicinal Plants

The tradition of using medicinal plants is very old. Some plants have been used for thousands of years. Through overuse many of these plants have gone extinct. They no longer exist and will never exist again. This is a great loss. Many others are already recognized as endangered, rare or vulnerable. Some only grow in a specific area and cannot be found anywhere else. The future of these medicinal plants and the future of traditional medicine is now a great concern. If we lose medicinal plant species, we not only lose important parts of complex ecosystems, we also lose all the medical knowledge that our ancestors have accumulated over many generations. Therefore it is essential to conserve not only the plants themselves, but the knowledge and information associated with them.

In South Africa, many tons of plant materials are collected by inexperienced “entrepreneurs,” and are trucked, into the urban centres from our forests and wildernesses on a daily basis. The urban demand for traditional medicines has created a huge trade in traditional medicines. A great number of the plant species that are traded on the muti markets take many years to reach maturity and are sold for a fraction of what they would cost to grow. The customers at such markets are largely traditional healers themselves, and are often hard pressed for money to obtain their medicines. As a species become scarce, their market price escalates and the pressure on the wild populations increases.

Many rural people get some form of employment and income from the muti trade and plant medicines play an important part of our countries health care system and culture. For these reasons conservation measures remain controversial and are not easy to enforce. Medicinal plants such as *Agapanthus*, leta-la-phofu (Sotho), that have been cultivated extensively for the ornamental plant trade, may be threatened in the wild but are unlikely to become extinct as they are grown in nurseries. In this way *Agapanthus* will survive and be available to future generations. It seems our only solution may be to grow and conserve medicinal plants in nurseries.

As many species require several years to reach maturity and chemical potency, growing them is not economically viable in the short term. How can communities be encouraged to grow them?

If the part of the plant being used is underground as in bulbs, corms and roots, once harvested the plants will often not regenerate. In some cases it is only a portion of the plant that is used. Aerial parts like leaves can often be harvested from the wild without taking out the whole plant. Good examples of this are Lengana/Wilde als (*Artemisia afra*) page 38.

There are many traditional customs and taboos associated with plant collection which may be seen as a preventative measure to protect plants from being over-harvested. Bark is often harvested only in strips from the east side of a tree, so the morning sun will help the tree to recover. This knowledge is not always applied. In South Africa medicinal plant collection from the wild is mostly undertaken by rural people, most of whom exist below the breadline, and rely on this for income generation. The plant gatherers are usually not trained traditional practitioners. They are unskilled in the correct harvesting techniques and are paid by the kilo or load. Plants are harvested with little thought to keeping a sustainable source or root crop. The effects of this trade are most clearly seen in the fatal ring barking of tree species that are popular for their medicinal barks (Cunningham, 1988).

Certain medicines may only have the desired effects if they are picked at specific times. Experienced traditional healers often collect plants from specific areas because they know the plant's chemistry depends on many factors – climate, soil type, relationships with other plants and mineral-rich rocks, water supply, sunlight or the shade they receive. Even the phase of the moon or time of day at which the plants are harvested can influence chemistry. More research is required to determine what the ideal conditions are to produce plants with the ideal chemistry. A conservation strategy for such plants would be to harvest seed from a population of plants in a specific area, propagate young plants in a nursery, and then plant them back into nature with their parent plants. The wild area could be surveyed and divided into grids/blocks in which the numbers of each species could be monitored for sustainable use.

Another way to conserve medicinal plants is to encourage plant-part substitution (see *Warburgia* page 78. Where plants are used ritually for magical purpose, the leaves would be a more sustainable option than the roots. A good candidate for this approach is the indigenous ginger, Isiphepheto (Zulu), *Siphonochilus aethiopica*, which is extinct in KZN. This plant is widely cultivated and traded for its underground parts even though the leaves have been shown to be more biologically active (Journal of Ethnopharmacology ed. 71 2002).

In today's economic climate, the best chance any species has to avoid becoming extinct by the hands of humans, is if it can fit into our economic system and we can literally pay for its existence. This has been the case with so many of our rare plants and animals such as the white rhino which have been saved till now through eco tourism and sustainable hunting. Many medicinal plant species are of commercial interest either as medicines or for the ornamental plant trade. The more they are traded responsibly, the more money there will be to preserve them.

Specialist medicinal plant nurseries could contribute to the awareness of threatened species, and could even become community based businesses which supply the healers and community members with plants to grow on their own land. With a great number of species, seed could be harvested by the community from designated areas without destroying the plants to supply such nurseries. This model could be used for job creation, economic development and as a conservation tool. It could be seen as a way of saving lives by saving plants.

Diverse ecosystems, like forests, often hold more economic value in the form of sustainable harvests of diverse products than agricultural land does. This is a key insight for conservation. Our forests, containing many of our medicinal plant resources, are literally being chopped down and burnt for firewood or developed into agricultural land for crops or livestock. We must think of creative ways of dealing with this crisis. For example, sustainable technologies like solar cookers, that reflect and direct sunlight off their polished metal surfaces, could help reduce reliance on fire wood. Our forests and wild areas still hold medicinal secrets that remain undiscovered and are worth conserving for that reason alone.

Save our plants. Save our future.

In South Africa much of the traditional medicinal plant knowledge has not been recorded in writing. It has been communicated by word of mouth through the generations. This is what we call an “oral tradition.” When an old and experienced healer dies there is a great risk of losing that knowledge unless it has been communicated to others. With the rise of HIV many people are dying younger and this is interfering with the process of transferring knowledge. One advantage of orthodox western medicine is that its information has been recorded in writing, classified and stored. This ensures ongoing evaluation and discussion by scientists and medical practitioners on an international level. It also makes access to the information in the form of education easy. While oral traditions have their own advantages in a traditional society, much of the information is now being lost. Youth are also growing up in a society that is filled with forms of media and consumerism that communicate different social and economic values. They are becoming less interested in traditional healing practices. Traditional healers in southern Africa should perhaps look at the way traditional Chinese, Indian and Arabic medicine has been recorded in writing, classified, stored and taught in modern institutions and is also successfully sold in the form of popular books, magazines and television programmes.

The conservation and management of medicinal plants is key to the future of traditional medicine. How can traditional healers work together to get this on the conservation agenda?

What role will traditional healers play in the future?

For traditional healers to play any role they need to organise. Unlike orthodox western healers, traditional African healers have been particularly poor at organizing themselves politically and economically. There are hundreds of self-regulated traditional healers' organizations in South Africa and they are often in conflict with one another. There is no single council, trade union or group of recognized authorities that represents their interests in a comprehensive way. This is a major challenge for the future of traditional medicine. Active participation in the processes of registration and regulation will require new levels of cooperation between previously independent groups.

Promoting the values of traditional healing practices is an important part of working closer with the Department of Health and other primary health care practitioners in South Africa. Traditional healers also need to start thinking about how they will participate in designing the trials that will test their medicines. If they do not they will not be able to protect their own interests. Because traditional medicines are more than one pure compound, they cannot be tested as one pure compound. Traditional medicine involves more than chemistry. A true test would have to include a traditional consultation as well as all the other aspects of the traditional healing process. It is the whole experience that heals, not just one chemical. How will traditional processes of quality control and traditional values be integrated into tests? Who is going to invest money in this process?

Economics usually dictate that institutions who will make a profit from the knowledge are the ones who invest in the research. This is a real concern for traditional healers. Because of the continued exploitation of traditional knowledge systems, much secrecy and disinformation is spread by healers who try to protect their knowledge. For this to stop, western research bodies will have to ensure and deliver on shared profits derived from products based on indigenous knowledge.

The cultural elements of traditional healing that focus on meaning making may be the elements that distinguish traditional healers from contemporary herbalists who sell herbal products off-the-shelf. Perhaps it will be the meaning that the traditional healer adds to the process of healing that cannot be easily replicated by capitalism.



Helpful Resources

Hands On: Soil and Compost Life. Compiled by Ingrid van der berg. Available from Sharenet

Health Gardening: A guide to growing food for life. Compiled by Valley Trust. Available from Sharenet.

My Nursery: How to set up and run a community based Nursery. Available from Food and Trees for Africa and Sharenet.

Participatory Permaculture for Schools. Compiled by Tatia Currie. Umthathi Training Project.

The Permaculture Booklet: South Africa's First Grass Roots Permaculture Manual. Available from Food and Trees for Africa and Sharenet.

Catchment Action Knowing and Growing Muthi Plants: M Mander, N Crouch, S McKean, and G Nichols. Available from Sharenet

Indigenous Healing Plants, A. Dawson et al. National Botanical Institute, 1994 available from SANBI.

Living Well with HIV/AIDS, Food and Agricultural Organisation, United Nations, Rome, 2003

Contact Organisations

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011 7065614, Fax: 011 463 8967 , afristar@telkomsa.net

Ecolink, P O Box 727, White River, Mpumalanga, 1240, Tel 013 751 2120, Fax: 013 751
3287, eco.link@mweb.co.za

Food Gardens Foundation, P O Box 41250, Craighall, 2024, Gauteng, Tel: 011 880 5956,
Fax: 011 442 7642

Food and Trees for Africa, P O Box 2035, Gallo Manor, 2052, Gauteng, Tel: 011 803 9750,
Fax: 011 803 9604, info@trees.org.za, www.trees.org.za

Life-Source, T.Dr. Paul B. Barker (THP), 072 410 8044, lifesource.za@gmail.com

Medicinal Edible Garden Association, P.O. Box 1178, Parklands, 2121, Tel: 011 477 3236,
info@mega.org.za

National Botanical Institute; Private Bag X 7, Claremont 7735 011 799 8800 Fax: 021 762
3229, www.nbi.ac.za

Open Synergy, Integrated Lifestyle Solutions, P.O. Box 51, Linbro Park 2065, Gauteng,
South Africa, tel: 011 608 1641, info@opensynergy.co.za

Schools Environmental Education Development, 103 Balfour Road, Woodstock, Cape Town
and National, 7925, Tel: 021 447 7686, Fax: 021 447 7686, seed@intekom.co.za

Share- Net, P O Box 394, Howick, 3290, Tel: 033 3303931, Fax: 033 330 4576,
sharenet@futurenet.co.za

Ukuvuna, Permaculture for Sustainable Living: SADC. P.O.Box 4866, Midrand, 1685, Tell
011 310 6000, Fax 011 310 3000
Cell 083 665 3356, jonzira@yahoo.com

Umthathi Training Project, Spoornet Station Building, Lower High Street, Grahamstown,
Eastern Cape, 6139, Tel: 046 622 4450, info@umthathi.co.za

Valley Trust, P O Box 33, Botha's Hill 3360, Kwa Zulu Natal, Tel: 031 777 1955, Fax: 031
777 1114, vtrust@wn.apc.org

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Copies of this booklett can be ordered from:
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