



ERNST VAN JAARVELD



# *Waterwise* gardening

in South Africa and Namibia







# *Waterwise* gardening

in South Africa and Namibia







# *Waterwise* gardening

in South Africa and Namibia

**ERNST VAN JAARVELD**

Published in 2010 by Struik Lifestyle  
(an imprint of Random House Struik (Pty) Ltd)  
Company Reg. No. 1966/003153/07  
Wembley Square 2, First Floor, Solan Road, Cape Town 8001  
PO Box 1144, Cape Town, 8000, South Africa

This ebook edition published in 2013

**[www.randomstruik.co.za](http://www.randomstruik.co.za)**

Copyright © in published edition: Random House Struik (Pty) Ltd 2010, 2013

Copyright © in text and photographs: Ernst van Jaarsveld 2010, 2013  
with the exception of page 34, © Nigel Dennis/Images of Africa.

Publisher: Linda de Villiers  
Managing editor: Cecilia Barfield  
Editor: Gill Gordon  
Designer: Helen Henn  
Cartographer: Martin Endemann  
Illustrator: Helen Henn  
Proofreader: Glynne Newlands  
Indexers: Gill Gordon, Bronwen Leak

ISBN 978-1-77007-217-6 (print)  
ISBN 978-1-43230-358-7 (epub)  
ISBN 978-1-43230-359-4 (PDF)

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher and the copyright holders.

#### AUTHOR'S ACKNOWLEDGEMENTS

With grateful thanks to our Creator for His diverse creation and inspiration; my family for their patience and help; my colleagues at Kirstenbosch, and the many farmers who allowed me onto their land and offered their help during my field trips.  
Thanks are also due to Leslie Powrie of SANBI for providing the map data, James Deacon for checking the plant lists and Gill Gordon for editing the manuscript. Lastly, to anyone I might have left out, my thanks too.





# CONTENTS

## BECOMING WATERWISE

What is waterwise gardening? . . . . .	8
Horticultural categories for garden plants . . . . .	14
Establishing a waterwise garden. . . . .	20
Attracting wildlife to your garden . . . . .	22
The importance of soil, compost and mulch . . . . .	25
Planting and establishing a garden . . . . .	28
Pruning. . . . .	33
Useful indigenous plants . . . . .	37
Rockerries and ponds . . . . .	44
Indigenous creepers. . . . .	50
Growing new plants from seeds and cuttings . . . . .	51
Managing pests, weeds and diseases . . . . .	54

## REGIONAL GARDENS

Establishing your garden type . . . . .	62
Map: Biomes of southern Africa. . . . .	63
Fynbos gardens . . . . .	66
Strandveld-fynbos gardens . . . . .	102
Succulent Karoo gardens . . . . .	118
Karoo gardens . . . . .	140
Thicket gardens . . . . .	162
Namib Desert gardens . . . . .	188
Bushveld gardens . . . . .	220
Highveld gardens . . . . .	248
Subtropical East coast gardens. . . . .	288
Indigenous house plants . . . . .	330
Index . . . . .	342









# BECOMING WATERWISE





## WHAT IS WATERWISE GARDENING?

Waterwise gardening aims to make use of the best of indigenous plants to green our garden environment. Planting locally indigenous plants means they will be adapted to the prevailing conditions and, once established, should become self-sustaining. This not only leads to a reduced gardening bill, but also contributes towards environmental conservation. For example, if you live in a bushveld environment, it makes sense to establish a bushveld garden; or to create a fynbos or strandveld-fynbos garden if you live in the Western Cape. Indigenous gardening is effective gardening, in harmony with the environment and favourable towards birds, insects, frogs and reptiles. The key to waterwise gardening is to create a garden that is appropriate for your area, so that it becomes easy to select the right plants. Remember, though, that individual gardens can have many different microclimates, so you can also choose suitable plants from other regions to add interest and variety. This book deals with indigenous gardening in South Africa and Namibia, two diverse countries that embrace the full spectrum of different climatic regions, from arid deserts to subtropical forests. In order to make the best of your garden, you first need to understand your own environment so that you can select appropriate indigenous plants that are climatically adapted to your local conditions.



## WHY IS WATERWISE GARDENING IMPORTANT?

Throughout the world, the natural forests are being steadily destroyed, yet these are the green lungs of our planet, absorbing toxic carbon dioxide (CO<sub>2</sub>) and releasing life-giving oxygen. (Remember your school biology lessons: plants 'breathe in' carbon dioxide and 'exhale' oxygen.) A decrease in forested areas means that less carbon dioxide is absorbed, so more of it remains in the atmosphere, where it traps the sun's heat. This results in global warming which, in turn, precipitates climate change. And, in South Africa, as elsewhere, once our environment becomes ever warmer and more arid, our natural water resources will come under increased pressure.

In terms of gardening, this means we need to move away from expansive lawns and green 'European' gardens towards what is right for our land. Historically, plants from Europe and elsewhere were brought to Africa for planting in our gardens. At the time, there were definite benefits to this in both agricultural and horticultural terms. However, many of these plants came from countries with climatic conditions quite different from our own, so we 'manipulated' our local conditions by additional watering or enriching the soils in order to allow these 'aliens' to thrive. In a region where two-thirds of the land consists of semi-desert, gardening with 'exotic' species has now become an expensive and wasteful practice and an unnecessary strain on our scarce water resources. Therefore, in the interests of conservation, we should strive towards having our everyday gardening practices be in harmony with nature. This way, not only will we conserve water, but our gardens will take on a truly African character.

However, as our towns and cities expand, more and more indigenous plants are threatened with extinction. We tend to take our 23,000-plus indigenous plant species for granted, but South Africa's flora has long been held in high regard overseas and it continues to make an impact, especially with regard to ornamental gardening. Pelargoniums (*Pelargonium* spp.) and Hen-and-chickens or Spider plant (*Chlorophytum comosum*) are two of the most popular indoor plants in Europe, while our Crane flower (*Strelitzia reginae*) is planted so widely in Los Angeles that it is commonly regarded as that city's floral emblem!

South African plants are cultivated in many countries. Every year, new hybrids and cultivars of our indigenous plants are released onto the market. This incredibly rich 'natural goldmine' holds tremendous potential – not only for the horticultural industry but also in fields such as medicine and agriculture.

Because plant species can vary genetically within their populations, it is possible to selectively breed plants to meet particular needs. For example, the many species of Bush lily (*Clivia miniata*) available to gardeners were all obtained from the original wild source. Another example is watermelon, a globally

popular fruit that derives from the indigenous wild Tsamma or Kalahari desert melon (*Citrillus lanatus*), which occurs naturally throughout the drier areas of southern Africa.

## FROM PLANNING TO PLANT SELECTION

Gardens need to be planned if they are to reach their full potential. The first part of this book provides an overview of general gardening practices and offers step-by-step advice on how to establish an indigenous garden. Horticultural categories are explained, garden plants are placed in perspective with regard to their environment, and answers are given to questions such as why it is so difficult to grow certain fynbos plants, while others seem to flourish with little encouragement. Advice is offered on how to improve soils and look after your plants, how to utilize grey water, and alternative methods of saving water. Buying fully grown saplings or seedlings from a nursery can be quite a pricey exercise, so handy tips are provided on how to cultivate your own plants from seeds, truncheons and cuttings.

The second part of the book deals with gardening in each of the botanical regions of South Africa and Namibia, as well along the Atlantic and Indian ocean coastlines.



This self-sustaining fynbos garden incorporates a variety of colourful flowering plants, including watsonias, geraniums and agapanthus.



Euphorbias and aloes were traditionally used as barriers to protect livestock; here they grow together in Kirstenbosch National Botanical Garden.

South Africa's botanical regions, or biomes, can be divided broadly into winter-rainfall areas: Fynbos, Strandveld-fynbos and Succulent Karoo; and summer-rainfall areas: Karoo, Bushveld, Highveld, the subtropical Indian Ocean coastal belt, and the coastal and mountain forests. The Thicket biome of the Eastern Cape receives predominantly summer rainfall, but also gets some rain during winter, making it something of a transition zone.

The Namib Desert biome has a peculiar climate. The central and northern parts receive summer rain (albeit scant rainfall), with fog having a significant influence, while the southern Namib receives rain in winter, supplemented by fog at other times of the year. In the southern parts of the Namib, the vegetation leans towards Succulent Karoo, making this region difficult to classify. Rainfall in deserts is always erratic, but the moisture delivered by the frequent coastal fogs enables some plants to survive.

Each botanical region is briefly described, along with the climatic conditions that shape the relevant natural environment. The behaviour of plants in gardens is inevitably related to their broader environment, and the text explains how best to treat plants to encourage maximum performance. Each regional section contains lists of indigenous plants that have the best potential for gardening under waterwise conditions. All the basic horticultural categories (trees, shrubs, succulents, bulbs etc.) are covered, with a selection of plants given for each category, as well as suggestions for pioneer plants (fast-growing species suited to newly established gardens). To determine your botanical region, refer to the map on page 63.

Many parts of the country are located in transition zones that lie between biomes, such as between Fynbos and Succulent Karoo, or Thicket and Subtropical coastal forests. If you live in a transition zone, you may be able to use plants from both regions.

Also, remember that gardens have a number of microclimates that are created by buildings, walls, terraces, hedges or even large trees. So, even if you live in the Fynbos region, you could have a moist, protected area in your garden that is suitable for creating a forest-like glade. Use your discretion, and regard the advice given in this book as a guideline to help you plan your garden.

## THE RISE OF ORNAMENTAL GARDENING

Ornamental gardening, or ornamental horticulture, which was first practiced by the Egyptians some 4000 years before the birth of Christ, remains a popular hobby throughout the world today.

The first European settlers at the Cape regarded the unfamiliar indigenous plants as 'wild' and, consequently, the plants they chose to cultivate around their homes were mostly of European origin. In gardening terms, indigenous plants were largely neglected until the latter part of the 20th century, when an interest in the ornamental use of indigenous plants started to develop.

Since then, particularly over the past two decades, there has been increasing interest in and appreciation of our botanical richness and South Africa's regional botanical gardens, especially Kirstenbosch National Botanical Garden (which was established in 1913), have played an important role in this regard. In recent years, traditional gardening practices, such as keeping areas



around the house free of ‘weeds’, choosing exotic, water-guzzling trees, replanting formal flowerbeds with every season and raking up fallen leaves, have been replaced by a more environmentally friendly approach. This entails using natural mulch ‘blankets’ to suppress weed growth, replacing non-indigenous trees with locally indigenous ones, and welcoming birds and other small creatures into our gardens.

The trend towards focusing on the environment has given rise to specialized regional gardens such as fynbos gardens, Karoo gardens, highveld gardens, subtropical gardens and so on. This is a global phenomenon, as gardening changes from its traditional emphasis on a disciplined, formal, garden to natural gardens that are in harmony with their local environments.

### HOW DO INDIGENOUS PLANTS END UP IN OUR GARDENS?

Worldwide, the release of new garden plants is an ongoing process. The ornamental indigenous plants available to us today were all collected somewhere in South Africa or Namibia and then propagated by botanists or horticulturists.

When it comes to plants, the natural environment is our ‘mine’ and botanical explorers are the ‘prospectors’ who visit remote parts and collect plants with ornamental potential. These are first tested at a botanical garden or plant institution and only released if they are deemed suitable. The process does not stop here, though: some botanists seek out the breeding potential of plants such as *Pelargonium*, from which they can develop new cultivars. Spontaneous mutations, such as variegations, may be advantageous horticulturally, while mutations that have been spotted by a botanist or gardener and grown on vegetatively (cloned) have also enriched our garden plant diversity.

In nature, plants vary in flower colour, size, leaf ornamenture and so on. For example, Silver-leafed spur-flower (*Plectranthus oertendahlii*), which originates from KwaZulu-Natal’s Oribi Gorge, is now grown in many parts of the world. A superior form (with a more intense silver pattern and larger leaves), which comes from Uvongo, has subsequently spread into general cultivation. The same is true for the Krantz aloe (*Aloe arborescens*), which has a wide local and international distribution and from which many local forms (such as ‘Pearson’, ‘Rycroft’ and ‘John Winter’) have been released as new cultivars.

Southern Africa is botanically diverse and, as many parts of the region have been poorly explored from a botanical point of view, new plants are still discovered and named annually. Recently named plants that have been released into horticulture include Green’s barleria (*Barleria greenii*), Mauve spur-flower (*Plectranthus malvinus*) and Baarskeedersbos aloe (*Aloe juddii*), an attractive fynbos aloe that is easily grown from cuttings.

### WHAT MAKES AN INDIGENOUS PLANT GOOD FOR THE GARDEN?

Among the qualities that we look for in a garden plant is that it should be both functional and attractive. Functional, in so far as it will thrive under the prevailing conditions, provide protection from sun or wind, bind soil, or has hedging properties, thus providing privacy; and visually attractive, in that plants should have appealing foliage or flowers or a striking architectonic shape. Most importantly though, a ‘good’ garden plant should be reasonably easy to grow and be able to withstand everyday garden disturbances from dogs, cats and humans.

So why are certain plants so difficult to cultivate while others adapt readily to any new environment? The answer lies in the history of each specific plant’s natural habitat.

#### Understanding a plant’s natural behaviour

Some plants live a short life, others thrive for years; some grow slowly, others exhibit rapid growth; some lawn grasses cope with shade, others die back under trees. Once we know a plant’s natural tendencies, we can understand why it behaves the way it does in our garden, making gardening much easier and more pleasurable. The key is to understand the botanical region (biome) for each garden type and the main requirements for plant growth in each biome. Gardening has to be viewed holistically: the botanical regions are the result of adaptations over millions of years and each region has a unique set of environmental drivers that have formed and moulded the plants that grow within it.

For instance, in the Fynbos biome, the main drivers are the long, dry summers with their associated windy conditions, which are conducive to the spread of wild fires.



The Crane flower (*Strelitzia reginae*), a horticultural ‘flagship species’ for South Africa, is grown widely around the world.

Many fynbos genera, such as *Erica*, *Protea* and *Leucadendron*, have evolved in areas with acidic, nutrient-poor soils. Because of their leathery leaves, most fynbos plants do not provide much in the way of food for grazing animals, so the vegetation evolved largely in the absence of disturbances caused by large herbivores, which explains why some fynbos species are so fragile; you hardly have to walk around them and they perish! Furthermore, many fynbos plants depend on fire for their propagation. This has resulted in plants with very specific requirements that are difficult, if not impossible, to replicate at home. It is impractical to set fire to your fynbos garden every eight to fifteen years(!), so we have to rely on pruning and other means of rejuvenation in order to keep garden plants going.

In comparison, consider the Thicket vegetation found in the valleys of southern and southeastern South Africa. Here, the fertile soils have given rise to plants that are very nutritious and palatable to herbivores. Plants in this biome have specifically evolved to cope with the major disruption caused by large grazers, such as elephant, rhino and buffalo, as well as smaller grazers, like tortoises. They have also adapted to the region's twin predicament of unpredictable rainfall and frequent droughts.

Plants from the thicket region are exceptionally well-suited to gardens, for they have evolved to withstand 'maltreatment'. This is one of the reasons why geraniums (*Pelargonium* spp.), which are common in this vegetation type, and Hen and Chickens/Spider plant (*Chlorophytum comosum*) are popular around the world. In gardens, minor disturbances occur on a daily basis, even if, these days, they are caused mainly by children or dogs.

Some thicket-originating plants, such as Pork bush or Spekboom (*Portulacaria afra*), Ox-tongue (*Gasteria*) and Pig's ears (*Adromischus* and *Crassula* spp.), actually benefit from a degree of disturbance. Leaves or parts of leaves that are broken off can take root to form new plants and plant colonies. These plants transform negative actions (such as being trampled on) into something positive - a means of propagating themselves vegetatively by cloning. An aloe can be removed from where it was growing and left unplanted for a year but, as soon as it is planted again, it will start to regrow. As humans, we would do well to take a proverbial leaf from their book!

We should strive to establish gardens that are in harmony with our immediate environment (a term that encompasses both natural vegetation and local climate), as this indicates the conditions under which specific plants will flourish. The more the conditions in your garden match those under which the plants evolved in nature, the more readily they will adapt and flourish in cultivation. But bear in mind that your garden and its surrounding structures may harbour a number of microclimates, each of which may differ from your general conditions.

There are no set rules in gardening, but if you decide to plant species that originated in an environment, or climate, quite different from your own, gardening is sure to be a taxing exercise. While some people undoubtedly enjoy a challenge, for most of us, financial and time constraints mean that a self-maintaining garden is the most desirable option.

## SOUTH AFRICA'S CONTRIBUTION TO WORLD ORNAMENTAL HORTICULTURE

We often think of our indigenous plants as being not colourful enough, or too slow-growing and difficult to cultivate, but the rest of the world sees things differently and South African plants have made a distinct impact in ornamental horticulture.

Worldwide, the two most widely grown house plants are Spider plant (*Chlorophytum comosum*) and pelargoniums (*Pelargonium* spp.), both of which originated in South Africa. These flagship species are popular partly due to their beauty, but mainly because of the ease with which they can be grown and because their hardiness means they are perfectly adapted to withstand drought as well as neglect. Pelargoniums are floriferous (not shy to flower) and easily bred. Many new cultivars are released annually, and they flourish on windowsills across Europe, America and Asia.

Other indigenous plants that have made the international hit list are proteas and related species, which are popular both as garden plants and in the cut-flower industry.

Flowers that are popular in Mediterranean and subtropical gardens worldwide due to their waterwise qualities include Crane flower (*Streitizia reginae*), Krantz aloe (*Aloe arborescens*), Num-num (*Carissa macrocarpa*), Cape honeysuckle (*Tecoma capensis*), Plumbago (*Plumbago auriculata*), Kerkei or Money plant (*Crassula ovata*), Evergreen (Common) agapanthus and its cultivars (*Agapanthus praecox*) and Wild iris (*Dietes* spp.).

Popular indigenous house (indoor) plants include Fern arum (*Zamiaculcas zamiifolia*), Barberton daisy (*Gerbera jamesonii*), Spur-flower (*Plectranthus* spp.), Bush-violet (*Streptocarpus* spp.) and Bush lily (*Clivia* spp.).

Aloes, a true African flagship species, dwarf aloes (*Haworthia* and *Gasteria*), and stone plants (*Lithops*, *Conophytum*, *Pleiospilos*) are popular. Impala lilies (*Adenium*) are favourites in the East, where some stunning hybrids have been developed. Various bulbous plants, such as Arum lily (*Zantedeschia aethiopia*), Belladonna lily (*Amaryllis belladonna*) and *Watsonia*, *Lachenalia*, *Gladiolus* and *Haemanthus* species are widely known; as are many annuals, including Blue lobelia (*Lobelia erinus*) and Livingstone daisy (*Dorotheanthus bellidiformis*). Climbers include Asparagus fern (*Asparagus plumosus*), Black-eyed Susan (*Thunbergia alata*) and Canary creeper (*Senecio tamoides*). Porkbush (*Portulacaria afra*) heads the popularity stakes for indigenous trees.





ABOVE The drought-hardy nature of *Pelargonium* species makes them readily adaptable to a variety of garden conditions.

TOP RIGHT The colourful Common gazania (*Gazania krebsiana*).

RIGHT Pincushion (*Leucospermum cordifolium*) is a rewarding shrub that can be found in gardens throughout the world.



## CONSERVING GARDEN BIODIVERSITY

Growing local indigenous plants is a positive act of conservation, benefiting not only the plants but also a host of birds, insects and reptiles. Many indigenous plants are under threat of extinction due to urban expansion and the demand for agricultural land.

In recent years, *Erica verticillata*, Anemone mesemb (*Jordaniella anemoniflora*) and Strandveld honeybells (*Freylinia visseri*) almost became extinct in nature due to urban expansion and farming. Wood's cycad (*Encephalartos woodii*) has become extinct in northern KwaZulu-Natal. Fortunately, all these plants have ornamental value and have been saved from total extinction by horticulturists; today, they are found in many gardens and are fine examples of *ex situ* conservation. (*Ex situ* is when plants are conserved 'outside' their native habitat by propagation and cultivation, whereas '*in situ*' means that plants are conserved 'within' their natural environment, in other words, in the wild).

Silver willow (*Salix mucronata* subsp. *hirsuta*), which became extinct along streams in the Cape Peninsula, was re-introduced from plants cultivated at Kirstenbosch which were, in turn, introduced from the Olifants River. Unfortunately, a leucadendron species (*L. grandiflorum*) once found in Boscheuvel (today's Bishopscourt suburb in Cape Town) became extinct before its conservation status

was known. However, the Silver tree (*Leucadendron argenteum*), which occurred in the same habitat, was more fortunate and today is widely spread by cultivation (*ex situ* conservation). The attractive Red-flowered lampranthus (*Lampranthus vanzylji*), a mesemb first named in the 20th century from the Breede River near Worcester, has never been re-collected; the creation of the Brandvlei Dam is suspected of destroying its alluvium habitat, resulting in its extinction. Diamond mining along the West Coast and the mining of heavy minerals on beaches and dunes in the Western Cape's Vredendal district and around Richard's Bay in KwaZulu-Natal have also contributed to habitat loss.

Home gardeners who want to save plants from extinction are therefore encouraged to grow local endemics, particularly lesser known 'rare gems', not just the popular or common species.

Kirstenbosch National Botanical Garden and its satellite gardens in other parts of South Africa play a vital role by growing rare plants and selling them to the public. Plants that are sustained in this way include cycads, particularly rare species such as Albany cycad (*Encephalartos latifrons*) and Dune cycad (*E. arenarius*), and rare fynbos species, such as Kouebokkeveld aloe (*Aloe kouebokkeveldensis*), Baarskeerdersbos aloe (*A. juddii*) and Langeberg rocket aloe (*A. decumbens*).





## HORTICULTURAL CATEGORIES FOR GARDEN PLANTS

Garden plants can be divided into broad horticultural categories, such as trees, bulbs, grasses, succulents, aquatic plants etc. These categories enable gardeners to utilize the basic differences between types of plants when planning their garden. For example, it helps to know whether a young plant is going to grow into a tall tree or a bushy shrub, or whether it will flower annually or need to be replanted every year. To put it another way, horticultural categories represent the living 'building blocks' you will use to create your garden. It is generally easy to distinguish between the categories or groups, although there are some plants that do not fit neatly into one category or another. Throughout this book, plants that are listed under the various horticultural categories may belong to different plant families and are not necessarily related to other plants in that group.





ABOVE Honey euryops (*Euryops virgineus*) is a fast-growing shrub.  
 LEFT Sweet thorn (*Acacia karroo*), seen here in full flower, is one of the best-known indigenous trees in South Africa and Namibia. It is a fast-growing pioneer tree that is suitable for all regions. Nitrogen-fixing nodules in the roots encourage other plants to grow beneath the canopy.  
 OPPOSITE Barberton daisy (*Gerbera jamesonii*)

## PIONEER PLANTS

Pioneer plants are rapid growers and often very floriferous (bearing many flowers), making them ideal choices when establishing a garden from scratch. The very name 'pioneer plants' provides a clue as to what they are: under natural conditions, these are the first plants to reappear after a fire, or any other disturbance, has affected an area. They create conditions under which other plants can become established; by protecting soil from erosion, for instance, or providing shade for seedlings and young plants of other species. Full sun and disturbed soils stimulate the germination of pioneer plants' seeds, which explains why they take so easily in newly established gardens.

Keurboom (*Virgilia divaricata*) and Honey euryops (*Euryops virgineus*) are good examples, but pioneer plants can be found in most of the horticultural categories discussed below. Apart from their rapid growth and the protection they provide to succession plants, pioneer plants are often colourful and can provide an instant garden in their own right. Many 'weeds', which are often invasive aliens, fall into this category.

## TREES

Trees constitute the largest structural element in the garden, providing the framework for all other plants. Trees may be deciduous or evergreen and can vary considerably in size and shape. For example, consider the typical 'flat top' form displayed by bushveld trees such as Umbrella thorn (*Acacia tortilis*),

versus the 'conical' shape of the evergreen Mountain cypress (*Widdringtonia nodiflora*). Growth rates also vary considerably, even within species. It is often difficult to predict how large a tree will become, as exceptionally good conditions may result in growth beyond the norm while, under difficult conditions, the same tree may become stunted.

Trees usually have one strong, central trunk, although what distinguishes a small tree from a large shrub is not always very clear. A tree may be simplistically described as 'any plant that one can climb'. (*Welwitschia mirabilis*, from the northern Namib Desert, is probably the only exception: this peculiar, crownless tree with only two opposite leaves has a very short trunk, up to 70cm tall, but perhaps we can argue that it can still be climbed!)

It is important to plant the right trees for your garden, taking into account the available space, prevailing environmental conditions and the intended function of each tree. South Africa is endowed with more than a thousand indigenous tree species belonging to many different families, each with its own characteristics. Some common tree families include the pea family (Fabaceae), willow family (Salicaceae), elm family (Ulmaceae), fig family (Moraceae), laurel family (Lauraceae) and citrus family (Rutaceae). Many indigenous trees are fruit-bearing and will attract birds to the garden.

Sweet thorn (*Acacia karroo*), the tree species with probably the widest natural distribution, can be planted almost anywhere in the country. Like most acacias, the root nodules are able to

'fix' nitrogen (this means that the *Bacillus radicola* bacteria, which live in the root nodules, convert nitrogen from the air into organic nitrogen in the soil). Acacias tolerate other plants growing beneath their canopies. This derives from their native habitat, where the tree provides shelter for grass to grow beneath its canopy. The grass benefits from the nitrogen that the tree provides, making it an attractive spot for animals to rest and graze. In exchange, their dung provides fertilizer to the tree.

In some ways, it is a pity that the Outeniqua yellowwood (*Podocarpus falcatus*) was chosen as our national tree instead of the acacia. Most people are familiar with the Sweet thorn, but the Yellowwood has a relatively limited distribution in South Africa (it also occurs as far as northeast Africa). Our rarest tree is the Silver tree (*Leucadendron argenteum*), which is confined to a few spots on the Cape Peninsula and adjacent region. Our most conspicuous tree is the Baobab (*Adansonia digitata*), which occurs throughout Limpopo, Mpumalanga and northern Namibia. Both the useful Marula (*Sclerocarya birrea*), with its edible fruit, and the colourful Coral tree (*Erythrina* spp.), come from the Bushveld regions in the north and northeast.

## SHRUBS

Shrubs are usually multi- and woody stemmed. They vary in size from roughly one metre to three metres high and may be evergreen or deciduous. Some shrubs, such as the reseeding proteaceous plants, have a limited life span while others are long-lived, simply resprouting after a fire or pruning. Shrubs are generally easily propagated from seed or cuttings.

Between 2000 and 3000 species of shrubs occur in southern Africa, the majority within the Fynbos biome. They belong to various plant families, including the pea (Fabaceae), mint (Lamiaceae), daisy (Asteraceae), snapdragon (Scrophulariaceae) erica (Ericaceae) and geranium (Geraniaceae) families.

Probably the two most useful shrubs are Rooibos (*Aspalathus linearis*) and Honeybush (*Cyclopia genistoides*), both of which are cultivated commercially to provide tea. Many shrubs make good hedges, provided they are properly shaped. Examples include Confetti bush (*Coleonema pulchellum*), Cape honeysuckle (*Tecoma capensis*), Plumbago (*Plumbago auriculata*), Spekboom (*Portulacaria afra*) and Brown sage (*Salvia africana-lutea*).

## CREEPERS AND CLIMBERS

In gardening terms, there are grey areas between creepers, climbers, shrubs and trees. Some, such as *Tecoma capensis* and *Plumbago*, can support themselves, and make good hedge plants if grown in full sun. However, when planted in shade, they develop long, thin branches which creep towards the light. (These two examples are able to adapt to their circumstances.)



Climbers, such as Black-eyed Susan (*Thunbergia alata*), are generally fast-growing plants that can be used to cover pergolas or fences.

However, most creepers are unable to support their own weight, so they establish themselves in a number of ways: some lean against their host (scramblers) or wind themselves around it (vines); others are equipped with attaching tendrils (including modified stipules) or short adventitious roots on their stems, which they use to enable them to climb or gain height. Their growth rate usually far exceeds that of their host plants and they invest more energy in lengthening than in woodiness.

Creepers are useful for covering unsightly walls and dead trees, or for adorning pergolas or trellises. Some are also suitable as hedge plants. Because creepers are such fast growers, they need to be cut back regularly. Many creepers have conspicuous flowers. They are usually easily propagated from seed or cuttings.

Most indigenous creepers, which grow naturally in the well-wooded eastern and northern parts of South Africa, belong to the Bignonia (Bignoniaceae), Daisy (Asteraceae), Grape (Vitaceae) and Olive (Oleaceae) families. Some of our best-known creepers are the bright yellow Canary creeper (*Senecio tamoides*), Flowering ivy (*Senecio macroglossus*), Black-eyed Susan (*Thunbergia alata*) and Port St John's creeper (*Podranea ricasoliana*).

## ARCHITECTURAL OR FEATURE PLANTS

Architectural plants attract attention and tend to be used to create focal points. In horticultural terms, this category includes all plants with conspicuous forms, such as palms, cycads, large aloes, cobas, crane flowers and wild bananas. These unusual, and often striking, plants can be utilized to accentuate a corner of the garden or create a specific visual effect.

Some architectural plants, such as the Kosi palm (*Raphia australis*), are large. Others, such as Cobas (*Cyphostemma juttae*),





Livingstone daisy (*Dorotheanthus bellidiformis*), from the southwestern Cape, will thrive in summer rainfall areas if watered well in winter.



March lily (*Amaryllis belladona*) produces dark pink to white flowers in early autumn. It does well in gardens in the winter rainfall areas.

Elephant's foot (*Dioscorea elephantipes*) and Quiver tree (*Aloe dichotoma*), have succulent features and are drought-resistant. There are architectural plants to suit each type of garden.

## LAWNS

Despite the fact that lawns demand a lot of attention and large quantities of water, they are an enduring feature of our gardens. Their surface is soft and relatively clean, making them ideal for all kinds of activities; children, particularly, love to play on them. Essentially, lawns consist of the cropped growth of mat-forming grass species. Two indigenous grasses are suitable for planting as lawns: Buffalo turf grass (*Stenotaphrum secundatum*) naturally occurs in coastal areas from the Cape Peninsula eastwards to Mozambique and beyond. It has a superficial growth habit and is therefore relatively easy to manage. Couch grass (*Cynodon dactylon*), which has a wider natural distribution, forms underground runners that are difficult to control, and shoots tend to pop up everywhere in the garden. Couch grass has a fine texture and is often used for laying out bowling greens.

Establishing and maintaining a lawn is a demanding, expensive and time-consuming process. In winter-rainfall areas, lawns, especially fertilized ones, require watering throughout summer. Large lawns are not really suitable for self-maintaining waterwise gardens and, ideally, they should be limited to the minimum, or be dispensed with entirely.

## PERENNIALS

A perennial is a plant that persists for several years (generally three or more), not dying after its first flowering and fruiting. Perennials, which are also referred to as herbaceous plants, are

favourites among gardeners. Many different indigenous perennial species belong to various plant families, so a selection of suitable plants can be obtained for each garden type.

Popular perennials include the well-known Barberton daisy (*Gerbera jamesonii*) and Common gazania (*Gazania krebsiana*). Although the growth period of the Common gazania coincides mainly with the winter rains in the southwestern Cape, this plant is widely adaptable and also suitable for summer-rainfall regions. (*Gazania krebsiana* occurs in regions that receive both summer and winter rainfall, while *G. krebsiana* subsp. *arctoides* occurs only in summer-rainfall areas.) Barberton daisy occurs naturally in the summer-rainfall region and requires additional watering in summer if it is grown in the southwestern Cape.

Some perennials have a tufted growth form while others bear stems. Most can be pruned back hard during their resting (dormant) season and should re-sprout at the beginning of the next growth season. Most perennials have fleshy roots, which enables them to withstand dry periods.

## GROUND COVERS

Ground covers have a low, dense growth habit, covering the soil like a blanket or mat. They are often cultivated for their soil-binding properties and are ideal for stabilizing steep embankments.

Many of the species that make good ground covers are naturally drought-resistant and require little maintenance, so they can be used instead of grasses for creating lawns; a bonus is that they also suppress weed growth. Drought-resistant ground covers usually have linear, leathery or fleshy leaves, but hairy leaves and a greyish-green coloration are other typically distinctive characteristics.

Ground covers are easily propagated from cuttings, runners or seed. They can belong to various plant groups, including bulbs and succulents. The different kinds of wild asparagus, Spider plant (*Chlorophytum comosum*) with its fleshy roots, and Spotted-leaved drimiopsis (*Drimiopsis maculata*), an evergreen bulb (geophyte), are all exceptionally well suited to shady gardens.

## ANNUALS

As the name suggests, annuals are plants with a limited life span, generally coinciding with rainfall seasonality. Like most pioneer plants (see page 15), annuals are very rapid growers, making them ideal for newly established gardens, as they are quick to reward the gardener with colourful displays. The southwestern Cape and western parts of the Northern Cape are known for their stunning annual displays of spring wild flowers and it comes as no surprise that the greatest diversity of annuals occurs in the winter-rainfall areas, although a few species are also indigenous to the summer-rainfall areas. The beautiful Blue lobelia (*Lobelia erinus*), which was developed abroad, grows in both rainfall regions.

Most annuals are easy to propagate, although exceptions include Rooibloom-bokbaaiwygie (*Dorotheanthus rourkei*). Typical examples of indigenous annuals are Rain daisy (*Dimorphotheca pluvialis*), Namaqualand daisy (*D. sinuata*), Common arctotis (*Arctotis hirsuta*), Livingstone daisy/Bokbaaiwygie (*Dorotheanthus bellidiformis*) and Showy sunflax (*Heliophila coronopifolia*). Once established, they will continue to make an annual appearance.

## GEOPHYTES

Geophytes (bulbs and bulb-like plants) have underground, fleshy scales (modified leaves that are actually true bulbs), corms, stolons or tubers. Many geophytes have a distinct dormant period, becoming deciduous, while some remain evergreen – notably those that are indigenous to the subtropical coastal areas. The greatest diversity of geophytes in the world occurs in the Nieuwoudtville district of the Northern Cape; the home of indigenous bulbs.

Most geophytes belong to the iris family (Iridaceae) which is very well represented in South Africa. Other well-known species include arums (*Zantedeschia* spp.), Glossy forest lily (*Veltheimia bracteata*), Silver-leafed ledebouria (*Ledebouria socialis*) and the large, blue Scilla (*Mervilla plumbea*). Geophytes vary in size from the miniature Tom Thumb hyacinth (*Litanthus pusillus*), which measures just a few millimetres in diameter, to the giant Candelabra flower (*Brunsvigia josephinae*) from the Western Cape.

Geophytes are easy to establish and tend to be drought-resistant. Propagation is by means of division or from seed. Many species form bulbils or cormlets. Although most geophytes grow with their bulbs below ground level, some grow with their bulbs above the soil.

## SUCCULENTS

Succulents use their leaves, stems and roots to store water. This means that they are able to cope with periods of drought, even when the soil dries out completely. Some smaller species flourish in the shade provided by other shrubs and many should be protected against full sun. Most South African succulents are endemic to the Succulent Karoo, Karoo, Thicket and Bushveld biomes, but the category is varied enough to cater for every garden type. When grown in their native habitat, succulents tend to survive well, but they may need care in different climates.

South Africa has about 4500 species of succulents – the greatest diversity in the world. In size, they vary from a few millimetres high, in the case of *Conophytum* species, to the Tree aloe (*Aloe barberae*), which can grow to a height of 20 metres.

In the right environment, succulents are an ideal choice for a waterwise garden. Due to their ability to go without water for long periods, they are self-sustaining and require little attention. They thrive in containers and rockeries and are perfect for growing in limited spaces such as balconies and on windowsills. Succulents are easily propagated and transplant readily, and many species flourish as container plants, even indoors.

## REEDS AND GRASSES

Reeds and grasses are popular ornamental garden plants. They display a tufted growth habit and some species can reach three metres in height. They are fast growers with adventitious root systems, making them effective in binding soils. Propagation is by seed or, for those with a spreading rootstock, by division.

Reeds from the Fynbos and Strandveld regions belong to the Restio family (Restionaceae) and are ideal for windswept coastal gardens. Ornamental grasses are common in the grasslands of the Highveld and Bushveld (some do occur in Fynbos but are less common). Seeding grasses attract a variety of interesting granivorous (grain-eating) birds to our gardens.

## FERNS

Ferns are soft plants bearing their fronds (leaves) from a central rosette. Tree ferns develop stems, while other ferns have creeping or climbing rhizomes. The young fronds of ferns are characteristically curled up, unrolling as they mature. Ferns do not produce flowers; instead, they are equipped with spore-bearing organs on the underside of their leaves. Propagation is by division or from the spores.

Most indigenous ferns with ornamental value come from the moist, forested and well-watered regions of the Drakensberg and adjacent areas, making ferns an excellent choice for a subtropical forest garden or a moist, shady spot in any garden. Ferns also thrive in containers and can be used as house plants.





The colours of the Cape water lily (*Nymphaea nouchali* var. *caerulea*) make it an attractive option for a garden pond in any climatic region.

## AQUATIC PLANTS

Aquatic, or water, plants can be divided into three subcategories: marginal, floating and submerged plants. Aquatic plants are easily cultivated from seed or through division.

Marginal aquatics, such as Bulrush (*Typha capensis*), are those that grow near ponds or water features. They tend to be reed-like and are usually fast growers that are easily established. They also provide shelter to birds and smaller aquatic plants.

Floating aquatics have submerged roots and floating leaves, which provide shelter to fish and other aquatic animals. Examples include Cape water lily (*Nymphaea nouchali* var. *caerulea*) and the well-known, edible Waterblommetjie (*Aponogeton distachyos*). Vlei-daisy (*Cadiscus aquaticus*), a rare species found in small impoundments just north of Cape Town, has floating leaves and stems and small, white flowers.

Submerged aquatics, such as Eelgrass (*Vallisneria spiralis*), grow entirely underwater. They release oxygen into the water

in which they grow and absorb excess minerals and nitrates, as well as other harmful substances. Submerged plants help to keep garden ponds clear and clean. Eelgrass tends to be very palatable to herbivorous fish and should not be used in koi ponds as the fish will eat it in preference to any other available foodstuffs.

## HERBS

In horticultural terms, the term 'herb' is broadly applied to a variety of plants with medicinal or culinary uses. Herbs range from small plants to bushy shrubs. They can be grown from cuttings, slips or seed, and are successful in the garden, both *in situ* and in various-sized containers.

Herbs can be found in all the main vegetation regions. The Fynbos region has probably the two best-known tea shrubs outside of China and India: *Aspalathus linearis*, the source of the world-renowned rooibos tea, and *Cyclopia genistoides*, which gives us honeybush tea.



## ESTABLISHING A WATERWISE GARDEN

Moving away from the traditional Euro-African garden towards indigenous waterwise gardening is easy. The most important principle is to create a garden that is suited to your local climate, as it will be self-sustaining and require little, if any, additional watering. The indigenous vegetation of your immediate environment is a good indication of the type of garden you should aim for. The second principle is that your garden should reflect the character of your natural surroundings.

Southern Africa's most important biomes, or vegetation regions, are Fynbos, Strandveld-fynbos, Succulent Karoo, Karoo, Thicket, Highveld, Bushveld, Subtropical/Coastal forest and Desert (see map on page 63). Once you know what your vegetation region is, you'll be able to choose from a variety of suitable ornamental indigenous plants perfectly suited to that region. For example, plants that thrive in a Highveld garden may not do as well on the humid KwaZulu-Natal coast. Similarly, Fynbos or Strandveld-fynbos plants may be ideal for the wet winters of the Cape metropole, but they will struggle in summer-rainfall areas.

### PLANNING A NEW GARDEN

If you are fortunate enough to be starting a new garden from scratch, the first thing to do is to take into account the direction in which the plot faces: north or south. Most gardens have a number of microclimates but, as a general rule, south-facing areas will be cooler and more moist, while those facing north will be warmer and more exposed to direct sunlight. Analyze the soil to determine whether it is predominantly loam, sand or clay.

Decide which spaces to reserve for functional uses (such as a swimming pool, patio or entertainment area, rockery, water feature, orchard, vegetable patch, compost heap etc.). Once you have a broad idea of what your garden could look like, it is a good idea to sketch a layout plan. Use your building plans to see where the sewage and water pipes are located. The roots of trees and fast-growing shrubs can cause significant damage to pipes, so it is worth knowing what to avoid before you start planting trees.

Consider the natural vegetation in surrounding areas and make a list of established indigenous plants in other gardens, parks or open spaces. Talk to your neighbours and find out which indigenous species are doing well in their gardens, and which are struggling. Find out whether wind is a factor and determine whether your garden needs a windbreak, as well as which parts of the garden are the most sheltered from the prevailing winds.

Consult the relevant regional chapter of this book to see which pioneer or fast-growing plants are best for your area and use them to create your initial framework. Once you have worked out which fast-growing plants to start off with, you can think

about choosing more permanent trees and shrubs. But, before buying any plant, first ascertain how big it might eventually become so that you allow it an adequate amount of space.

A common mistake, when starting a garden, is to plant too close, not allowing enough room for the mature plants. When it comes to trees, particularly, you need to have some idea of the mature tree's eventual height and the extent of the canopy. A sapling planted in a sunny spot may, in time, become such a large tree that only shade-loving plants will flourish beneath it, and it could block natural light from some rooms in your home.

### OPTIMIZING WATER USAGE

Apart from planting drought-resistant plants, there are various ways to save water in your garden. Considering that up to 70 per cent of domestic waste water can be utilized for gardening, this could result in a saving of up to 30 per cent on your water bill.

#### Grey water

This is waste water from the bath, shower and bathroom basin. Because dishwater contains an element of grease (animal fats, oils etc.), it is less suitable and should be avoided. If you want to use grey water on your garden, try to avoid soaps and detergents that are rich in phosphates. This applies particularly in the southwestern Cape, where the soils are naturally deficient in phosphates, as the addition of phosphates can be harmful to many fynbos plants. Where possible, opt for eco-friendly brands.

Various commercial enterprises offer systems that reclaim both grey water and swimming pool run-off, making it suitable for applying to your lawn and plants. For the most part, all that is needed is to install a few simple devices, consisting of a filter, a buried container for collecting the water and a pump that can be connected to a garden hose or sprayer.

#### Rain water

Think about installing a storage tank to harvest rainwater from your roof. In most systems, the water passes through a sieve to trap leaves and debris and then flows into a barrel with a tight-fitting lid to keep out mosquitoes, insects and wind-blown dust.



## MAKE THE RIGHT CHOICES: TEN TIPS FOR SAVING WATER

1. Lawns consume a lot of water. Reduce or scale down your lawn (and notice how your mole and mole cricket headaches disappear!), or replace thirsty 'exotic' grass with indigenous options such Buffalo turf grass (*Stenotaphrum secundatum*) or Couch grass (*Cynodon dactylon*).
2. Areas of lawn beneath fast-growing trees are prone to deteriorate as a result of competition for sunlight and water. However, many ground covers will grow happily in dry, shady conditions and need far less water than grass. Try Emerald fern (*Asparagus densiflorus*), Spotted-leaf drimiopsis (*Drimiopsis maculata*), Spider plant (*Chlorophytum comosum*) or Fairy crassula (*Crassula multicaeva*).
3. In flowerbeds, use a mulch cover or an inorganic 'blanket' to suppress weed growth, protect soils from erosion, encourage beneficial soil organisms and retain soil moisture. Gravel is a natural inorganic covering that requires no watering, covers bare ground, keeps soil cool and helps to prevent weed growth.
4. Avoid synthetic (inorganic) fertilizers. Instead, apply natural compost or other organic products. Inorganic fertilizers speed up plant growth, which leads to increased water needs. Furthermore, unnaturally vigorous growth results in softer plant tissues, which makes plants more susceptible to diseases. The same applies to lawns. An unfertilized, locally indigenous garden should be disease-resistant.
5. If you want to grow high-maintenance annuals, try to select plants whose growth season coincides with the rainfall pattern of your area. Don't plant winter-growing annuals in summer-rainfall areas, where they will need additional watering; likewise, summer-growing annuals will need to be watered if they are grown in the winter-rainfall region. To be waterwise, choose annuals that are adapted to the rainfall pattern of your region. Generally speaking, though, most indigenous annual wild flowers can be established in autumn and will spontaneously flower in spring.
6. Plant locally indigenous geophytes, as their dormancy period will naturally coincide with the prevailing dry season. Evergreen agapanthus (*Agapanthus praecox*) thrives almost anywhere. Its fleshy roots make it extremely drought-resistant and, as it originates from the southern Cape, it is adapted to both summer and winter rainfall, making it a popular choice with gardeners, not only in South Africa but all over the world.
7. Large, shrubby succulents, such as Krantz aloe (*Aloe arborescens*), Spekboom (*Portulacaria afra*) or Money plant (*Crassula ovata*), are ideal for hedges. They are also fire-resistant; a definite asset if you live in an area that is prone to wild fires.
8. It is important to take care of the basics when establishing new plants, as well-established plants are more capable of coping with periods of drought or unseasonal rain. Transplanted plants should receive ample water and nourishment during their first season to enable them to settle in properly.
9. Only water plants during the late afternoon or early evening, when evaporation is lowest. Irrigation systems are not always necessary but, if you use one, opt for a drip-irrigation system with an automatic timer. Household grey water or borehole water is suitable for most trees, shrubs and lawns.
10. Drought-resistant plants are easily recognized by their fleshy roots, leaves or stems. Other characteristics include narrow, hairy or leathery leaves and leaves with a grey-green or dull green colour.

### Borehole water

In areas where there is a high water-table, you may be able to sink a borehole. However, it is best to have your water tested before going ahead, as water containing too many dissolved salts can be harmful to your plants. You might need a filtration system to ensure the borehole water can be used on the garden. (Depending on municipal regulations, you may require permission to install a borehole and might have to display a notice on your property stating that borehole water is being used.)

### Drip irrigation

Traditional sprinkler systems are extremely wasteful as much of the spray misses its mark, but drip irrigation reticulates water to individual plants by means of a network of thin pipes, preferably laid underground. Automatic systems can be set to provide water at specified times, such as at night or early morning, when evaporation loss is at the lowest. Drip-irrigation systems are not suitable for lawns, which are better watered by pop-up sprinklers on a timer switch.



## ATTRACTING WILDLIFE TO YOUR GARDEN

A healthy garden with a mixture of plants should be able to sustain a variety of wildlife. Garden biodiversity is the sum of all the living things – plants, birds, insects, reptiles and mammals – that can thrive in a garden. The greater the diversity, the better for our environment and the more we can counteract climate change.

The presence of insects, birds and animals reflects a healthy, balanced garden. Animals and birds play an important role in aerating the soil, eradicating pests, pollinating flowers and assisting with the germination of seeds. And what would a garden be without birdsong? Every garden creature, big or small, has its role to play; if you do your best to protect and encourage wildlife, your garden can become your own private nature reserve.

In contrast, the absence of lizards, frogs, chameleons and small wildlife is a sign of ecological imbalance. We should learn to appreciate insect and frog sounds rather than view them as a nuisance. Many animals help to control pests, making it unnecessary to apply chemical insecticides (which should be kept to a minimum, anyway). Every garden pest has its natural enemy; it is just a case of putting the right ones together.

Each of South Africa's nine vegetation regions (biomes) has specific species that will occupy your garden if you create the right habitat. For example, trees always attract birds by providing nesting, food or protection but, in the northeastern parts, bushbabies may also make their home in certain trees.

Over time, the urban environment can create new habitats for many birds, reptiles and mammals. In recent decades, the heavily treed Pretoria-Johannesburg corridor has become an artificial 'savanna' which is now home to many birds and animals not previously seen in the region.

Some species are vital for controlling garden pests. Lizards eat snails, beetles and grasshoppers. Eradicating harmless mole snakes means moles can become a problem. With the trend towards less lawn and more ground cover, moles have less impact,



but we should not get rid of them altogether as they have a role to play in aerating and fertilizing the soil. Animals can become invasive precisely because we have 'successfully' eradicated all their natural enemies or because we have created 'artificial' conditions that encourage them to move into the area.

## ATTRACTING BIRDS

Dense shrubs and creepers will encourage birds to nest in your garden, but you can increase your bird population by providing for their specific needs in terms of water, shelter and food. By planting appropriate food plants, you can turn your garden into a natural pantry. Seed-bearing plants attract finches and waxbills, while plants that bear berries or fruit will be visited by starlings and mousebirds. Omnivorous and insectivorous birds, such as shrikes, boubous and robins, help to control a variety of pests (although they take their toll on chameleons, lizards and geckos).

Birds assist in pollination and seed dispersal by their presence and feeding habits. Did you know that the shape and structure of a flower can reveal the type of pollinator it will attract? Dainty flowers that cannot support the weight of birds will be visited by insects, while large, tubular flowers on a sturdy flower stalk will attract sunbirds, and scented tubular flowers that only open at night will be pollinated by hawk moths.

Gardens with plenty of trees, shrubs and creepers provide a sense of security and will encourage birds to nest on your property. Another incentive is a water feature or birdbath, situated beneath a shady tree or strategically placed in a position that gives visiting birds a clear view of any prowling neighbourhood cat.

Birds can be divided loosely into those that eat nectar, seeds, or fruits and berries. Nectar-feeders such as sunbirds, white-eyes, finches and starlings are attracted to indigenous plants that bear conspicuous tubular flowers, such as Aloes, Cotyledons, Cape honeysuckle (*Tecomaria capensis*), Red-hot pokers (*Kniphofia* spp.), Coral trees (*Erythrina* spp.), Boerbean (*Schotia*), Wild dagga (*Leonotis leonuris*) and many tubular *Erica* and *Phygelius* species. In the southwestern Cape, most proteas and pincushions attract the endemic sugarbird.

Trees or shrubs that bear berries or fruits, such as Wild figs (*Ficus* spp.), attract mousebirds and red-wing starlings in their droves. Doves are fond of the fruit of the Small-leaved plane (*Ochna serrulata*). Other trees favoured by frugivorous (fruit-eating) birds include Pigeonwood (*Trema orientalis*), Wild olive (*Olea europaea* subsp. *africana*), Tree fuchsia/Notsung (*Halleria lucida*) with its soft, purple fruit, Dogwood (*Rhamnus prinoides*), Buffalo-thorn (*Ziziphus mucronata*), White stinkwood (*Celtis africana*), Star apple (*Diospyros* spp.) and Guarri (*Euclea* spp.). Common turkey-berry (*Canthium inerme*) will attract the shy Rameron pigeon to your garden.



ABOVE Nectar-bearing flowers will attract a variety of sunbirds.



RIGHT Owls help to control rodents and should be welcomed.

Small, seed-eating birds usually forage on the ground for food, such as the nuts born by Spur-flowers (*Plectranthus* spp.). Many indigenous ornamental grasses, particularly the attractive Broad-leaved bristle grass (*Setaria megaphylla*), are favoured by seed-eaters such as finches and canaries.

Owls adapt well to urban areas and are excellent for controlling mice, rats and moles, which leave their burrows at night, when the owls are on patrol. You can buy ready-made shelters for both the barn owl and Cape eagle owl. These shelters can be fitted in a large tree or fixed to the upper part of any south-facing wall.

## ATTRACTING BUTTERFLIES

In addition to being colourful and attractive, butterflies are active pollinators. With over 800 local species, it should be easy to encourage some into your garden, especially if you consider their simple needs: larval food plants and nectar-producing flowers.

Female butterflies are attracted to specific host plants; for example, the Garden acraea (*Acraea horta*) favours Wild peach (*Kiggelaria africana*). They lay their eggs on the underside of the leaves so the emerging larvae have an instant food source. The larval stage can be a nuisance for a short period, often temporarily defoliating the tree. In general, butterflies are attracted to small, dainty, colourful and usually fragrant flowers – in other words, blooms that would not support the weight of a perching bird. This includes plants such as scabious, buddleja and members of the stonecrop family (Crassulaceae). The shape of a flower will reveal its possible pollinator so, by browsing in books, wandering through a nursery or observing butterflies in nature, you may be able to guess which plants will attract butterflies.

The Citrus swallowtail (*Papilio demodocus*) is a well-known summer visitor to our gardens. Other common butterflies include Yellow pansy (*Junonia hirta*), Painted lady (*Vanessa cardui*), whites (*Colotis* spp.) and Garden acraea (*Acraea horta*).

Butterflies tend to arrive when their preferred food source is in flower. The Mountain pride butterfly (*Aeropetes tulbaghia*),



The Cape dwarf chameleon (*Bradypodion pumilum*) is at home amongst Fynbos and Strandveld-fynbos vegetation.

with its orange-banded brown wings, is attracted to summer-flowering red-hot pokers and Red crassula (*Crassula coccinea*). It frequents the mountainous regions of South Africa in summer.

Plants of the Rutaceae family – Cape chestnut (*Calodendrum capense*), Horsewood (*Clausena anisata*) or White ironwood (*Vepris* spp.) – will attract females of some of the seven species of indigenous Swallowtail butterflies. African monarch (*Danaus chrysippus*) females are attracted to members of the milkweed family (Asclepiadaceae), such as the carrion flowers (*Orbea*, *Stapelia* spp.) or Milkweed bush (*Gomphocarpus fruticosus*).

The shape and colour of a butterfly will often reveal its individual defence strategy. Some brightly coloured butterflies are unpalatable or poisonous to birds, while others make use of their camouflage to avoid predators. Some harmless species even mimic other, poisonous species to avoid predation. Patterning, such as large spots on the back wings that resemble eyes, is also used to frighten off a predator.

## ATTRACTING MAMMALS AND REPTILES

Bushbabies (*Galago senegalensis*) live on the gum of acacias, but also eat moths, grasshoppers and other insects. Although they occur naturally in the Bushveld region, they have moved into suburban gardens in many parts of Gauteng. Sweet thorn (*Acacia karroo*) and other indigenous Acacia species attract bushbabies, as they provide both protection and food.

Moles and mole-rats help to aerate and fertilize soils, and are more beneficial than detrimental to your garden. The Hottentot golden mole (*Amblysomus hottentotus*) is insectivorous, but can uproot seedlings when tunnelling just below the soil surface. The Common mole-rat (*Cryptomys hottentotus*), actually a rodent,

sometimes eats bulbs; it can be discouraged from visiting your garden by planting euphorbias (*Euphorbia* spp.), as their roots secrete an irritant into the soil. The harmless Mole snake (*Pseudaspis cana*) naturally controls mole and rodent populations but, unfortunately, so many snakes are wantonly killed that moles and mole-rats have become a problem in many urban areas.

Insectivorous bats help to curtail flying pests such as mosquitoes and moths. Commercially available bat shelters can be fixed to any south-facing wall of your house.

Reptiles prey on a variety of garden pests. Rockeries, raised beds and garden walls provide sanctuary for lizards and geckos. The Cape skink (*Trachylepis capensis*) eats grasshoppers and crickets. Other skinks include Eastern striped skink (*T. striata*), Red-sided skink (*T. homalocephala*) and Cape legless skink (*Acontias meleagris*), which controls mole crickets in the soil. The small Cape dwarf gecko (*Lygodactylus capensis*), which occurs in most urban environments, is very useful at keeping insect numbers in check. The Marbled leaf-toed gecko (*Afrogecko porphyreus*) prefers to live indoors in Cape metropolitan areas, catching nocturnal insects such as moths and mosquitoes. The larger Tropical house gecko (*Hemidactylus mabuya*) is common in the Bushveld and eastern subtropical regions, while insect-eating Tree agamas (*Agama atricollis*) are an asset to any Bushveld garden. Flap-necked-chameleons (*Chamaeleo dilepis*) are common in the summer-rainfall regions. The Namaqua chameleon (*Chamaeleo namaquensis*), which occurs in the Succulent Karoo, and Cape dwarf chameleon (*Bradypodion pumilum*), which is common on the Cape Flats, also feed on insects.

Snakes are not naturally aggressive and will only strike in self-defence. The harmless, small Common slug-eater (*Duberria lutrix*) thrives in moist parts of the garden and is excellent for controlling snails and slugs. The Brown house snake (*Lamprophis fuliginosus*) is also harmless and, where a cat is unable to follow a bulb-eating rodent into its burrow, this snake can, so don't eradicate it! Remember that most snakes – and tortoises – are protected. A permit is required to keep them (unless they turn up in your garden on their own accord and you do not restrict their movement in any way).

## FROGS AND FISH

Garden ponds encourage frogs and toads, which will repay you by consuming any number of insects. Platannas (*Xenopus* spp.) are true aquatics and will occupy any pond, helping to control mosquito larvae. They also help to keep ponds clean.

Indigenous fish also help keep mosquito larvae in check. In the Bushveld region, stock your pond with hardy Banded tilapia (*Tilapia sparrmanii*) or Nguni-fish (*T. guinasana*); in the southwestern Cape, go for Cape kurper (*Sandelia capensis*).





## THE IMPORTANCE OF SOIL, COMPOST AND MULCH

Soil is the most important element of your garden. If you manage it properly, you will be rewarded with handsome plants and vigorous growth. When selecting plants, look for those that are suitable for your garden's specific soil type as well as your local climate. Although soil can be improved by the addition of compost or mulch, you can't really change its basic composition, so it is always better to work with what you have than persist in trying to grow plants that just don't like your soil.

The most important part of soil is the top layer (topsoil). This consists of both organic and inorganic substances (mainly minerals), water and air. Topsoil is where organic (natural) material is broken down and made available for re-absorption and from which plants' roots draw their nutrients. Your soil's inherent attributes such as texture, fertility and pH (degree of acidity or alkalinity) can be improved by the addition of, for instance, compost, lime, clay or other types of soil.

### COMPONENTS OF SOIL

The **organic** components consist of decomposed plant material as well as a rich mix of microorganisms and other life-forms, all of which play an important role in the decomposition of plant material. When a plant dies from natural causes, its constituent nutrients return to the soil. When you rake up fallen leaves or remove dead plants from your garden, you deprive the earth of vital nutrients and the soil becomes progressively impoverished.



By converting leaves and dead branches into mulch and chips (which you can apply as an organic 'blanket'), the nutrients are reclaimed, moisture is conserved, weed growth is suppressed and soil erosion is prevented.

The **inorganic** components of soil comprise minerals, air and water. The basic rock type that occurs in an area determines the basic soil type of that area. For example, igneous rocks, like dolerite and basalt, are gradually weathered down to produce very fine particles which, in turn, form clayey soils; granite (a blend of large and small particles) weathers into sandy loams; sedimentary rocks, such as quartzitic sandstone (made up of large particles), produce sandy, mineral-poor soils; shale or mudstone (fine particles) produce fertile loams.

Clay soils are richest in plant nutrients but, because they are so dense, air has difficulty penetrating them. Clay soils are slow to absorb water and dissolved minerals and they do not drain well (they retain water). Although many acacias (*Acacia* spp.) are well-adapted to clay soils, most garden plants will struggle in clay. Sandy soils, on the other hand, drain well, but are not good at retaining water and nutrients. Most garden plants prefer well-drained loams, that is, soils somewhere between clay and sand.

Some plant species will only grow in a specific soil type and soils that are too alkaline or too acidic for their requirements will prevent them from absorbing essential nutrients. Pride-of-De Kaap (*Bauhinia galpinii*) from the Bushveld and many *Protea* and *Erica* species from the Western Cape are examples of plants that thrive in acidic soils and will display deficiencies and retarded growth if planted in alkaline soil. The same is true for alkaline-loving plants, such as Kalahari impala lily (*Adenium oleifolium*) and Kraal aloe (*Aloe claviflora*), if they are planted in acidic soils.

## HOW TO IMPROVE YOUR SOIL

If you are creating a garden from scratch, start by removing any builders' rubble from your plot. Concrete and cement have an alkalizing effect, so do your best to remove as much as possible from the soil. At the very least, turn the soil and loosen it before you start planting, although you should also consider one of the following ways to further improve the soil.

### Synthetic fertilizers

Although synthetic (chemical) fertilizers result in rapid plant growth, they also lead to unnaturally slender growth and softer plant cells, which means that plants are more susceptible to diseases. In addition, more water is required to sustain the unnaturally fast growth. Synthetic fertilizers tend to 'force feed' plants and can damage them when applied incorrectly. Gardeners who want to follow environmentally friendly practices should keep the use of synthetic fertilizers to a minimum.

### Organic fertilizers

In nature, plants live off humus (a source of nutrients) and minerals that they absorb from the soil. In an undisturbed environment, fallen leaves and branches, dead tree stumps and natural debris are not removed. This organic material acts as a slow-release fertilizer while it is being broken down into humus via a long-term process known as humification (humus is thus an advanced stage of decomposition).

Home-made compost generally comprises organic kitchen waste and garden refuse such as leaf rakings, lawn clippings and bark. It can be made without additives but the process will be speeded up if fertilizer and/or lime are added. You can buy ready-made compost or make it yourself.

Organic compost can be worked into the soil as an immediate source of nutrients for newly planted plants, particularly trees. However, it is better to apply compost as a mulch or a cover layer than work it into the soil. Applying a cover layer (top-dressing) releases nutrients gradually, while at the same time retarding weed growth and protecting the soil. Compost and mulch also improve the soil's ability to retain water, leading to savings in water use. Applying leaves, bark or grass clippings as an organic mulch layer is a natural process with long-term benefits, although this takes longer due to the slower release of nutrients.

Ultimately, digging in compost or spreading it as mulch both yield the same result: the humification of organic matter, enabling plants to absorb their nutrients more readily.

Compost and natural manure are the best ways to enrich soil, but other effective natural fertilizers include those made from seaweed or chicken manure (*Bounceback*<sup>TM</sup>). Pure chicken manure can be harmful to plants because of its high concentration of nitrogen, but products derived from it have been distilled to bring the nitrogen down to a safe level for plants. In the right concentrations, nitrogen is vital for plant growth, but too much or too little nitrogen can be detrimental.

## MAKING YOUR OWN COMPOST

For gardeners, there are two ways to 'make' humus although, in both instances, it is the soil's natural organisms that do the actual work: the first is by making compost and the second is by applying a mulch layer.

There are no hard and fast rules when it comes to making compost. Essentially, it boils down to processing raw, organic material from your kitchen or garden into plant food. In the process, food waste (such as vegetable peelings, scraps and bones), garden refuse (fallen leaves, grass clippings, bark, etc.), moisture and oxygen are made available to organisms in the soil. Water is an essential component of compost-making, as soil organisms cannot function without it.





Branches can be put through a chipper to make a bark-like mulch.



Pebbles and stone chips help to cool the earth in arid regions.

When compost is ready to use, it will have a dark, crumbly texture and a sweet smell. The presence of earthworms is a good indication that the compost is ready. As these beneficial little worms burrow through the compost heap, they break it up and aerate it, making the nutrients more readily available.

There are a number of ways to make compost, so choose one that suits your available space and gardening requirements.

### Trenching

Dig a trench ( $\pm$  60cm deep x 1.5m x 80cm) and start to fill it with organic kitchen and garden waste. When the trench is full, top the organic waste with a layer of manure, replace the soil and leave the compost to break down. Because this way of making compost does not require turning, it is fairly slow. While the compost is forming, you need to keep the trench moist in the dry season or during dry spells. If you start another trench while the first one is maturing, you will have a permanent source of compost.

### Compost heaps

Choose a suitable spot where you can create a pile of organic material about one metre tall. If you have two compost heaps, you will always have one to draw from and one in the making. Deposit organic matter (kitchen waste, straw, lawn cuttings, manure, etc.) in layers, covering each layer with soil. To improve air circulation, place rougher, more durable material at the bottom of the pile. Keep the heap moist, but not too wet (no water should seep from it) and don't let it dry out completely.

Turn the heap every three to four weeks in order to improve aeration. An increase in the compost pile's temperature is a good sign of bacterial activity. The breakdown process will take approximately three months. To help promote decomposition, you can add small amounts of fertilizer and lime to the compost heap ( $\pm$  250ml per 1m<sup>2</sup> organic material).

### Composting bins

A selection of composting bins is commercially available. Compost made in these containers is an exceptionally good source of nutrients for fast-growing trees and annuals.

### MAKING YOUR OWN MULCH

Mulch - the natural organic layer often found around trees, shrubs and in herb gardens - consists of dead leaves, branches and other detritus. Natural organisms in the soil break down the material from below and this process, called decomposition, releases nutrients. Rain (or watering) helps these nutrients to penetrate the soil to root level, where they can be absorbed by the plant. A mulch, or cover layer, prevents soil from drying out, keeps it cool, reduces erosion, suppresses weed growth and encourages the presence of microorganisms. There are two types of cover layers:

#### Organic mulch

This can consist of bark or wood chips, prunings or fallen leaves in a layer at least 5-10cm thick. In general, the finer the texture of the added material, the faster it will decompose, so chop things into smallish pieces. Unlike compost, organic mulch does not need to be kept moist. Replace organic mulch every two years or so, or as necessary.

#### Inorganic mulch

In arid regions, a layer of coarse gravel, small pebbles or stone chips derived from shale or granite is ideal, as the stones will slowly release beneficial minerals into the soil. A stony layer also helps to cool the soil down, retain moisture and prevent erosion, and it makes a neat impression, particularly if the stone used comes from the area and is appropriate for the type of garden.





## PLANTING AND ESTABLISHING A GARDEN

The most important part of a plant's life is the phase during which it becomes established. With the right care and attention, a young plant will gain a toehold that will enable it to withstand dry spells, even droughts, throughout its life. To increase a new plant's chances of survival, plant it at the start of the rainy season. For gardens in the Fynbos, Strandveld-fynbos and Succulent Karoo regions, late autumn is the best time to plant; any time of year is fine for gardens in the Thicket region while, for summer-rainfall regions, it is best to establish plants in spring or early summer – the beginning of their growth season.

Start by digging a hole deep enough so that the base of the new plant will be level with the surrounding soil. Carefully remove or snip away the bag in which the plant has been grown; if it is in a pot or sturdy container, watering it first will help the plant to slip out more easily. Water again thoroughly after planting.

### INITIAL WATERING

Regular watering is essential until a new plant is well established. How often you should water depends on the prevailing weather conditions and will differ from region to region. A good rule of thumb is to water twice a week initially and then once a week until the plant has settled in. The amount of water given and the time of day that plants are watered are relevant, with thorough

watering once a week being better than watering little but often. Sandy soils drain quickly, so plants in sandy soils need to be watered more regularly than plants in loam or clay soils.

Once locally indigenous species are established, they should be able to survive on the prevailing rainfall and should not require routine watering. This is the essence of waterwise gardening.

### PLANTING TREES

Trees are the green lungs of our planet: they absorb carbon dioxide and release oxygen and, like all plants, help to combat global warming. Trees give us shade, flowers and fruit, and provide shelter to many creatures. Therefore, when planting a new tree, we should be thorough in our planning and execution.



Fast-growing pioneer species, such as the Keurboom (*Virgilia oroboides*), are generally short-lived, so it is good idea to plant them simultaneously with slower-growing, long-lived species. Once the pioneers start reaching senescence (old age), the other trees will be large enough to take over their functions.

When buying a tree, choose the largest sapling available, as smaller trees are more vulnerable and will need pampering for longer. The ideal sapling is a well-established, healthy plant in a large nursery bag or container.

## Problems with roots and buildings

Trees with aggressive root systems should not be planted near to buildings. Although all tree roots are capable of causing structural damage, the majority are not prone to doing so. Fortunately, only a few of our indigenous species have roots that might damage buildings and fixed structures. With the exception of the Wild figs (*Ficus* spp.), the 'damage-causing' species are mainly trees and large shrubs with fleshy roots, such as Cabbage trees (*Cussonia* spp.), Star-chestnuts (*Sterculia* spp.) and, to a lesser extent, Coral trees (*Erythrina* spp.), whose damage zone is restricted largely to the area directly beneath the canopy.

The Common wild fig (*Ficus burkei*) will attract birds to your garden but its aggressive root system can block channels and drainpipes, and cause foundations and walls to crack. This species has evolved in such a way that its opportunistic roots grow towards any source of water and organic nutrients.

Although Strelitzias (*Strelitzia* spp.) are shrubs rather than trees, they have an adventitious root system that can cause damage if the roots become pinched between walls or if the plants are located too close to paved areas.

As a tree increases in height, its girth (the circumference of its trunk) also increases and the roots, which anchor it and enable it to absorb nutrients, spread out in search of water and pockets of rich soil. If the roots encounter a leak in a sewage or water pipe, they will quickly penetrate it, leading to damage. Roots that are liable to cause the most damage are usually located laterally within the top 60cm of soil. By providing nutrients and water on the side opposite to where a structure or underground pipe is located, you can encourage roots to grow away from potential danger. Alternatively, you can dig a one-metre-deep trench between the tree and the applicable structure, and vertically line it with a sheet of thick plastic before backfilling with soil.

Single-stemmed plants, such as tree aloes and palms, have adventitious root systems but are unlikely to cause structural damage as their roots seldom grow thicker than finger-width.

When planting trees, take care not to confine them in narrow spaces between walls. Over time, as the tree grows and the trunk increases in girth, the tree may damage either the walls or the

underlying foundations. Ideally, you should plant large trees at least ten metres away from structures; a distance of 3–5 metres will suffice for smaller trees. However, many trees stand right next to walls and other structures without any problems. It is difficult to predict whether a specific tree is likely to cause damage or not, as this depends on a variety of factors, including whether or not the site is underlaid by a shallow rock formation.

## Preparing the planting hole for a tree

Dig a hole approximately twice the size of the container in which the young tree is growing. Mix a wheelbarrow of compost and a small tin of bone meal with the excavated soil ( $\pm$  250ml bone meal per 1m<sup>2</sup> compost and soil should suffice), then place some of the soil back in the hole, leaving sufficient space for the tree.

Carefully remove the tree from its container without damaging the root ball. Place it in the hole and firmly press down the soil around the trunk. The tree should be buried to the same depth as it was in the container. Make a shallow, dish-like depression in the soil around the tree. Cover the surrounding soil with a mulch layer. Water thoroughly once a week for the first few months. Some form of support, such as a pole or stake, is essential during the tree's initial growth phase, but this can be removed once the plant has become firmly established.

Many reliable, easily cultivated indigenous trees originate from the southern and southeastern parts of the country; try Wild olive (*Olea europaea* subsp. *africana*), Coast coral-tree (*Erythrina caffra*), Wild plum (*Harpephyllum caffrum*), cabbage trees (*Cussonia* spp.) and Coastal silver-oak (*Brachylaena discolor*).

## Growing trees from truncheons

A truncheon is a large branch (2–4m long) that is planted directly into a prepared hole. Suitable species include coral trees (*Erythrina* spp.), White karee (*Searsia pendulina*), wild figs (*Ficus* spp.) and indigenous willows (*Salix* spp.).

To create a truncheon, saw off the branch you want to use, cut off any lower side branchlets and trim the crown growth. Prepare a hole large enough to accommodate the truncheon and plant it, making sure the bottom third to half is below ground level. Make a shallow basin on the soil surface around the base of the truncheon. Water twice a week until the plant has become firmly rooted. Successful rooting is indicated by signs of active growth, such as new buds or leaves.

## PLANTING SHRUBS AND PERENNIALS

Follow the same steps as for planting a tree: first make a hole twice as large as the container in which the plant has been grown. Mix the soil with compost, carefully remove the plant from its container, taking care not to damage the root ball, and plant it



Spekboom (*Portulacaria afra*) is an ideal choice for a fire-resistant hedge if you live in an area that is prone to veld fires.

to the same depth it was in the container. Water the new plant thoroughly after planting and continue to water thoroughly once a week until it is comfortably established.

## PLANTING HEDGES AND FENCES

Hedges act as informal 'living' barriers that protect our properties and also provide shelter to birds and animals. Many indigenous shrubs and trees have great potential as hedge plants. For the most part, they are affordable and require relatively little maintenance although, in order to retain a neat shape, formal hedges should be trimmed regularly. When planning a hedge, plant shrubs close together and start pruning them from a young age to promote branching. Once the shape is well established, the hedge should be pruned whenever necessary to maintain it.

South Africa is rich in species with long, sharp thorns. In general, thorny plants are easy to cultivate, drought-resistant, adaptable and form almost impenetrable hedges and barriers. Good examples include Common spikethorn (*Gymnosporia buxifolia*), Kei apple (*Dovyalis caffra*), False spikethorn (*Putterlickia pyracantha*) and Thorny currant (*Searsia longispina*). In the eastern and northern regions, particularly, many species have evolved in response to disturbances caused by large herbivores.

### Thorny and spiny trees for a security hedge

If you want to create a barrier that is sufficiently impenetrable to be a deterrent against intruders, consider various *Carissa* or Numnum species: Big numnum (*Carissa macrocarpa*), Karoo

numnum (*C. haematocarpa*) and Bushveld numnum (*C. edulis*); or Turkeyberry (*Canthium inerme*), Spiny gardenia (*Hyperacanthus amoenus*), African boxthorn (*Lycium ferocissimum*), Kraal spike-thorn (*Maytenus polycantha*), certain currant (*Searsia*) species, as well as Kei apple and Common spikethorn.

Sickle-leaved asparagus (*Asparagus falcatus*) is a great spiny creeper but it requires an established fence to grow on. It is fast-growing and makes an effective barrier.

### Spineless trees and shrubs for hedges

If barrier security is not the issue, there are many spineless shrubs and small trees that make suitable hedges, including Bladder-nut (*Diospyros whyteana*), Hottentots-cherry (*Maurocena frangula*), Transvaal privet (*Galpinia transvaalica*) and Wild olive (*Olea europaea* subsp. *africana*). Bietou (*Chrysanthemoides monilifera*) is a fast-growing shrub that can easily be trimmed into a hedge. Dune crowberry (*Rhus crenata*), another fast-growing, dense shrub, is ideal for hedges along the coast.

Many smaller species are also suitable for formal hedges and borders. Some, like Confetti bush or Cape may (*Coleonema album* and *C. pulchellum*) and sages, such as Brown sage (*Salvia africana-lutea*) or Blue/Rusty sage (*S. lanceolata*), even lend themselves to planting as borders around herb gardens. The colourful Pride-of-De Kaap (*Bauhinia galpinii*) is easily grown into a hedge.

Other species suitable for spineless hedges include Orange-lips/Sunbird bush (*Metarungia longistrobus*), Cape honeysuckle (*Tecoma capensis*), Plumbago (*Plumbago auriculata*), Small-leaved



plane (*Ochna serrulata*), Star-apple (*Diospyros dichrophylla*), Bladdernut (*D. whyteana*), Coastal bladdernut (*D. scabrida*), Karoo bluebush (*D. lycioides*), Firesticks star-apple (*D. austro-africana*), Puzzle bush (*Ehretia rigida*), Transvaal privet (*Galpinia transvaalica*), Scrambling fig (*Ficus burtt-davyi*), Soutpanserg sage (*Hemizygia obermeyerae*) and Bush tickberry/Bietou (*Chrysanthemoides monilifera*).

A useful tip is to plant Climbing aloe (*Aloe ciliaris*) beneath hedging plants. Thanks to its shallow root system and sparse growth, it will hardly compete for nutrients and water as it rapidly rambles its way to the top of the hedge, while its bright orange-red inflorescences will liven up the hedge in spring.

### Fire-resistant hedges

Shrubby succulents are generally drought-resistant and can make excellent fire barriers. Most of these shrubs, including Spekboom or Pork bush (*Portulacaria afra*), Kerkey-bush (*Crassula ovata*) and the many forms of Krantz aloe (*Aloe arborescens*), grow to approximately two metres in height. (Other shrub-like aloes are also suitable, but the Krantz aloe grows rapidly, reproduces easily and the branches can be planted *in situ*.)

These species are all easy to cultivate and can be established from cuttings planted directly into the soil. To plant them, remove any obstacles and prepare the soil by working compost and bone meal into it. Plant the cuttings (ideally 30cm or taller) in a row, spaced approximately 50–100cm apart. Water thoroughly and apply a mulch layer. To encourage branching at an early stage, and depending on what you want from the plants, cut back the side branches by half (bearing in mind that some of these plants have a naturally dense branching pattern).

### TRANSPLANTING ESTABLISHED PLANTS

While most plants can be transplanted successfully, timing, horticultural category and plant age are important factors to take into consideration. The best times to transplant are at the end of the dry season or the beginning of the growing season. In the summer-rainfall regions, mid- to late winter is a good time.

As a rule, younger plants transplant with ease, while older plants are more difficult to transplant. This is especially true for trees. Transplanting big trees is costly and there is always a chance that the tree will die or will struggle to adapt to its new site.

It is often better to purchase a young, vigorous plant than try to transplant an old specimen which has lost its vigour. Deciduous plants and succulents are easier to transplant than evergreens.

### Deciduous trees

Deciduous trees such as White stinkwood (*Celtis africana*) and corkwood (*Commiphora* spp.), are easily transplanted during the resting season. Try to save as much of the root as possible if removing a tree from its original site.

### Evergreen trees and shrubs

Successful transplanting of evergreen trees and shrubs can never be guaranteed but, by keeping the rootball intact, you can decrease the risk of losing the tree. There is also a product on the market that can be sprayed onto the leaves before a tree is moved; it covers them with a thin film that reduces transpiration, thereby enhancing the tree's chance of survival.

Proteas are almost impossible to transplant, especially once they reach medium size, but most other large evergreen shrubs and trees can be transplanted.



ABOVE AND RIGHT The roots of Wild fig (*Ficus burkei*) will seek out any source of water and, as a result, can damage pipes, paving, walls and brickwork.

### Trees with tuberous roots

Trees with succulent roots, such as the cabbage trees (*Cussonia* spp.) or Namaqua red balloon (*Erytrophysa alata*), transplant easily, but take care not to damage the root, otherwise rot may set in. Treat the roots with a fungicide before planting.

Succulent trees, such as the Quiver tree (*Aloe dichotoma*), Tree aloe (*Aloe barberae*) and Porkbush (*Portulacaria afra*) transplant well. Aloes have an adventitious rootstock from the stem base, which can simply be cut off with a spade and planted. Their branches are usually brittle and break easily, so handle the plants with care when transplanting.

Treat all succulent plants by applying a fungicide to any damaged parts before replanting and do not water them immediately after transplanting as rot can invade the roots.

### Creepers and climbers

Climbers are generally easy to transplant, but should be pruned back heavily before they are moved. Try to save as much of the root ball as possible.

### Succulent shrubs and bulbs

Like succulent trees, these survive transplantation very well. Smaller aloes have a shallow root system that is easily dug up. If you are transplanting a single-stemmed aloe, like Mountain aloe (*Aloe marlothii*), just cut above the roots and it will simply form new roots and continue to grow.

When succulent shrubs or bulbs have been transplanted, do not water them immediately because harmful fungal spores can enter the wound and result in rot. Treat roots and any damaged parts with a suitable fungicide.

### Perennials

Perennials and herbaceous species are usually easy to transplant, but should be pruned back (roots and top growth if necessary) beforehand to reduce evaporation.

## HOW TO TRANSPLANT A LARGE TREE

1. Start your planning and preparations two to three months in advance. Depending on the tree's size, draw a circle in the soil around the tree (for example, if the tree is 2m high, measure  $\pm 50\text{cm}$  from the main stem, making a circle  $\pm 1\text{m}$  in diameter).
2. Dig around the rim of the circle to  $\pm 0.5\text{m}$  or deeper. This will trim the main roots and stimulate the formation of smaller roots (the root ball) within the circle. After about two months, the tree should be ready for transplanting. If the root ball is still too big, it can be trimmed again until it is a movable size. Roots take about two months to regrow and recover after trimming.
3. To uproot the tree, dig down and drive the spade underneath the root ball to sever any taproots. Once the tree is detached from its old roots, it is ready to be moved. Before transplanting, trim the branches back by at least a third of the tree's size (to reduce transpiration). Once the tree has been dug up, bind the root ball with strong sacking or hessian to keep the roots intact while the plant is moved and replanted.
4. When the tree is in its new position, keep the roots moist, apply a mulch and water regularly for a few weeks. If necessary, use commercial sprays to prevent evaporation from the leaves.

Prepare a hole about twice as big as the container in which the tree was planted; use a mixture of soil and compost and water thoroughly after transplanting.







## PRUNING

Pruning is a renewal process and, without it, many garden plants can deteriorate. Nature has various natural pruning methods, such as prevailing winds or browsing animals but, in a garden, trees and shrubs require human intervention if they are to remain looking their best. We prune plants to improve the future growth of foliage, flowers or fruit, or to remove dead branches or old inflorescences. We also prune to enhance the natural shape of the plant. Pruning is an ongoing process, and you may have to wait for a season or two to see the results.

Pruning provides a new framework from which an established plant can continue to grow and flourish. Pruning requirements differ within each of the plant groups; while it is essential to prune some plants, such as hedges, regularly, other plants only require occasional pruning. In terms of waterwise gardening, cutting away excess branches – particularly of trees – results in less transpiration (loss of water by evaporation through the leaves), which means the plant needs less water in the first place.

There are two types of pruning: **Essential pruning** is for plant groups that require regular, annual pruning to maintain their best performance. This includes fast-growing shrubby,

herbaceous and semi-woody plants such as Spur-flower (*Plectranthus* spp.), *Pelargonium*, *Hemizygia* and most hedges.

**Non-essential pruning** is the occasional removal of unnecessary branches, diseased parts and/or the periodic shaping of a tree to enhance its natural form. Most trees require non-essential pruning, which can take place whenever it is needed.

If you are pruning for the first time, remember that the objective is to get the best out of your plants. Once you understand the reasons behind pruning, the process will become less intimidating. Don't be afraid to prune; even if you get it wrong, the plant will recover in time.

### PRUNING TIPS

1. Keep the process simple and don't prune more of the plant than you need to.
2. In general, prune during the plant's resting season. In summer-rainfall areas this means in midwinter, when there is less active growth; in winter-rainfall regions, the best time to prune is autumn, when plants are resting before the next growth cycle. (In the southwestern Cape, autumn also coincides with the natural 'fire season', which prunes plants naturally, if sometimes drastically!)
3. Prune only when necessary and for the right reason, such as to encourage new growth or remove dead wood.
4. When shaping a plant, consider its position in the garden relative to the plants around it; your objective should be to achieve an overall natural look.
5. Don't throw away pruned branches; rather, turn them into mulch. However, diseased branches or plant parts should be discarded.

## NATURAL PRUNING

In nature, plants are 'pruned' by a variety of methods, ranging from branches being broken or blown off by strong prevailing winds or violent hailstorms, to leaves being stripped by browsing herbivores (or even whole sections of a tree being damaged or destroyed by elephants). If you live in an area where wind or hail are known to have an impact, then take this into account when planning how and when to prune the plants in your garden.

### Wind pruning

Seafront and coastal gardens tend to be shaped by the wind. Strong breezes and salt spray can combine to stunt trees and shrubs into a low cushion shape. Almost constant wind is characteristic of parts of the West Coast, the southwestern and southern Cape and the coastal regions of the Eastern Cape. Occasional storm winds can also prune trees severely, resulting in broken branches or even large trees being felled. But plants are remarkably resilient and new branches and fresh bark will soon cover the damaged portions and restore the tree's balance.

### Fire pruning

Fynbos, bushveld and grassland plants are all adapted to 'pruning' by fire. In fynbos, natural fires tend to occur every 8–15 years, mostly during late summer and autumn, when lightning strikes ignite the dry vegetation. After a drastic fire pruning, each plant group follows its own renewal strategy.

Some perennial plants have a persistent subterranean base from which they can re-sprout and self-renew; examples include King protea (*Protea cynaroides*) and Red hairy heath (*Erica cerinthoides*). Bulbs simply re-sprout after a fire, and the same is true for many of the shrub species that originate in the grassland and bushveld regions.

A large group of fynbos plants, known as the reseeders, are killed by fire and have to renew themselves from seeds that lie dormant in the soil.

### Frost pruning

Many highveld perennials are annually 'pruned' by frost and simply re-sprout. In cultivation, frost-prone plants should simply be pruned hard back from mid- to late winter. Examples include species of *Gerbera*, *Gazania*, *Osteospermum* and *Jamesbrittenia*.

### Self-pruning

Some aloes, such as *Aloe plicatilis* and Tree aloe (*A. barberae*), shed their large leaves. Others, such as Cape bitter aloe (*A. ferox*), have persistent leaves and should not be pruned, as it makes the plants look unnatural. Furthermore, the dry, leafy 'skirt' provides a haven for birds, lizards and other small animals.



Elephant and other large grazing animals are instrumental in pruning the vegetation in those game reserves where they are present.

### Pruning by herbivores

Many plant species that occur naturally in Bushveld and Thicket vegetation are subjected to regular browsing by a variety of large and small animals. Plants that are adapted to being eaten by animals tend to respond well to garden pruning; in nature, browsing is a continual process, so it does not impact on the plant as drastically as pruning by fire, for example.

In the garden, Spekboom (*Portulacaria afra*) responds well to being pruned, making it ideal for use as a hedge plant or as topiary. This soft-wooded shrub is common in Thicket, where it grows among armoured, spiny plants such as *Euphorbia*, *Putterlickia*, *Aloe* and *Dovyalis* species. Instead of resisting browsing by having sharp spines or emitting a bitter or poisonous sap, Spekboom has adapted to turn such 'abuse' into something positive. If a branch becomes detached, it will simply take root where it falls to the ground. Other plants that have adopted the same strategy include *Crassula*, *Adromischus* and *Gasteria*.

In the Bushveld, elephants and other big game, such as black rhino, giraffe, eland and kudu, tend to prune shrubs and trees from the top and sides while smaller antelopes, such as bushbuck, springbok and impala, feed from the lower branches. At ground level, leopard tortoises prune the plants from below. As occurs in Thicket, if branches of certain shrubby or arborescent succulent species – like Spekboom (*Portulacaria afra*) or Kerkey (*Crassula ovata*) – drop to the ground, new plants should take root from the drought-adapted succulent branches.

The Common star-chestnut (*Sterculia rogersii*) has brittle branches which, when pulled, become detached in a clean break from the stem attachment, making it well adapted to 'natural pruning' by large herbivores.



## PRUNING INDIGENOUS PLANTS

As mentioned earlier, non-essential pruning is the occasional shaping of a tree or shrub to enhance its natural form, while essential pruning is for deciduous trees and soft herbaceous shrubs that require regular annual pruning to maintain their growth.

### Non-essential pruning

**Trees** can be pruned when necessary to enhance their natural shape. Occasionally, you may need to prune for safety or practical reasons, such as removing overhanging branches or branches that cross each other, as these can tear in strong winds. Cut branches close to the stem but not directly against it, leaving a short 'heel'. Don't use tree sealant; it is better for the pruning wound to heal itself, as it would in the wild. Bear in mind that large branches are heavy and can tear as you prune them, leaving a nasty scar. To prevent this, make an initial cut into the underside of the branch and then saw downwards from the top to ensure a clean break.

**Evergreen shrubs** and ornamental trees generally only need occasional pruning to remove dead or diseased branches.

**Deciduous trees** are best pruned during their resting season (only prune deciduous trees if it is really necessary).

**Proteas** do not require regular pruning and should only be given the minimum amount of pruning required to remove dead branches and flowers when the plant is looking unsightly. Young protea plants can be pruned from the top to promote branching and a compact growth. Protea species that sprout from a persistent rootstock, such as King protea (*Protea cynaroides*), can be pruned drastically and should recover fully afterwards, thanks to their re-sprouting abilities.

**Erica** (heather) does not require much pruning and is best left alone. You can prune large bushes very lightly after flowering to promote a neat, compact shape

**Succulents** in general do not require pruning. Small, shrubby rocket aloes, such as *Aloe tenuior*, *A. commixta*, *A. gracilis*, *A. juddii* and *A. decumbens*, can be pruned if they become untidy. When the vigorous-growing, mass-flowering mesembs finish flowering in early summer, they can be pruned for neatness by removing old, dry capsules and senescent parts.

### Essential pruning

**Deciduous shrubs**, which flower on the current year's growth, are best pruned just after flowering. This includes plants such as Ginger bush/Iboza (*Tetradenia riparia*) which flowers profusely during winter after all its leaves have been shed, and so needs to be pruned in early spring.

**Pelargoniums** are re-sprouters that should recover well and flower at their optimum after effective pruning. Fast-growing shrubby species, including cultivars like *Pelargonium inquinans*,

*P. zonale*, *P. denticulatum* and *P. scabrum*, can be cut back to about one-third or half their size after their main flowering season is over. Smaller species can be pruned lightly to promote a compact shape. Pelargoniums are easy growers and pruned branches can be easily propagated.

**Spur-flower, sages and related shrubs** Shrubby summer-rainfall species flower in autumn, that is, at the end of their growing season, and can be pruned hard during winter. They should re-sprout strongly in early spring to repeat their flowering session during the next autumn. Examples include Narrow-leaved minaret flower or Wild dagga (*Leonotis leonurus*), Large spur-flower (*Plectranthus ecklonii*), Forest spur-flower (*P. fruticosus*), Soutpansberg sage (*Hemizygia obermeyeriae*), Pilgrim's Rest pink sage (*Salvia dolomitica*), Common pink plume (*Syncolostemon densiflorus*), Tongue-leafed sage (*Syncolostemon radula*), Large blue sage (*S. disermas*), Hedgehog sage (*Pycnostachys* spp.), Barberton sage (*Tinnea barbata*) and *Orthosiphon* species.

**Winter-growing sage** These species are also best pruned after flowering in autumn (the most likely time for natural fire pruning). Examples include African sage (*Salvia chamelaeagnea*), Red sage (*S. lanceolata*) and Blue sage (*S. africana-caerulea*).

**Summer-rainfall indigenous shrubs** that are best pruned in winter (July, August) include Geelbloombos (*Phymaspermum acerosum*), Grootverfbos (*Jamesbrittenia grandiflora*), Reusesalie (*Brillantaisia subulugurica*), Jêmbekkie (*Ruttya fruticosus*), Voelbekkiebos (*Metarungia longisrobis*), Turkey bush (*Melianthus* spp.), 'Phillis van Heerden' (*Ruttyruspolia*), Red Ruspolia (*Ruspolia hypocrateriformis*), Yellow rocket aloe (*Aloe tenuior*), Pilgrim's Rest pink sage (*Salvia dolomitica*), Soutpansbergklapperbos (*Barleria allostellata*), Plumbago (*Plumbago auriculata*), Cape honeysuckle (*Tecoma capensis*), Forest bell bush (*Mackaya bella*),



Spur-flower (*Plectranthus* spp.) can be pruned back hard during midwinter and will resprout with vigour in the spring.