GET TO KNOW TREES!

Air Cleaner
preserves Soil
Paper
Furniture
Ukudla
Swiakudya
Medicine
ukutya Zwiliwa Dijo
Food
Kos
Fuel
Kudla
Zwiliwa
Fabrics
Beautify
Shelter Oxygen

Trees are able to communicate and defend themselves against attacking insects.

Scientists have found that trees can flood their leaves with chemicals called phenolics when the insects begin their raid.

They can also signal danger to other trees so they can start their own defense.

Trees help fight the effects of climate change by absorbing carbon dioxide and other pollutant particulates, then store carbon and emit pure oxygen.

A tree can absorb as much as 22 kilograms of carbon dioxide per year and can sequester 1 ton (907kg) of carbon dioxide by the time it reaches 40 years.

Tree Ring

The General Sherman, a giant sequoia, is the largest tree (by volume) in the world, standing **83.8m tall** with **52,000** cubic feet of wood **(1,486.6m).**

Trees are some of the oldest living organisms on earth, for example, a live oak can live up to be over **500 years.** The world is home to just over **60 000** different tree species.

There are around **3.04 trillion** trees on earth; however **3.5 billion** to **7 billion** of these trees are cut down every year. Trees are able to communicate and defend themselves against attacking insects.

The yellowwood tree, also called the real yellowwood **(Podocarpus latifolius)** is the National Tree of South Africa.

An average tree is made up of **99% dead cells,** only around **1%** of it is alive at any time, consisting of the leaves, root tips, and phloem (a thin layer of under bark that acts as a food delivery system) One large tree can provide a day's supply of oxygen for up to four people.

The world is home to just over **60 000** different tree species. There are around **3.04 trillion** trees on earth; however **3.5 billion** to **7 billion** of these trees are cut down every year.

The age of a tree can be determined by the number of growth rings. The size of the growth ring is determined in part by environmental conditions such as temperature and water availability.

Trees and vegetation reduce runoff and improve water quality by absorbing and filtering water.

Planting trees in public spaces and gardens can increase the aesthetic appeal of neighbourhoods and the economic value of houses and property.

Leaves appear green because of chlorophyll which absorbs red and blue light energy, causing the green energy to bounce off the leaf's surface. Scientists have found that older bigger trees share nutrients with smaller trees, which later repay them back when they have developed.

In South Africa, only **0.4%** of our landmass is covered by natural forest. That's only **500 000 ha,** by **39 million** ha of savannah systems

Different parts of the tree grow at different times of the year. A typical pattern is for most of the foliage growth to occur in the spring, followed by trunk growth in the summer and root growth in the autumn and winter. Not all trees follow the same pattern.

There are three main types of trees that grow on South African plantations; **pine, eucalyptus and wattle.** Trees create economic opportunities, for instance, fruit harvested from community orchards can be sold, thus providing income.

Small business opportunities in nursery establishment, green waste management and landscaping arise when cities value mulching and its water-saving qualities. The largest and most famous forests in South Africa are Knysna and Tsitsikama Forests of the Southern Cape.

TREES OF THE YEAR

1 SCLEROCARYA BIRREA — MARULA

FLOWERS

LEAVES

MARULA FRUIT

TREE PROFILE

FACTS AT A GLANCE

SCIENTIFIC NAME: *Sclerocarya birrea*
COMMON NAME: Marula
SIZE: Medium to large tree of 9-18 m
WATER REQUIREMENTS: Drought tolerant
LEAVES/FLOWERS: Leaves are alternate, compound with sharply pointed leaflets, mostly crowded at the end of the branches. Female and male flowers are borne on separate trees.
FEATURE: A prolific fruit bearer, single tree can produce up to 500kg of fruit per year.
MAINTENANCE: Low maintenance

DESCRIPTION

ORIGIN: The marula tree is native in most parts of East, West, North, Southern and Central Africa. In South Africa it is more dominant in the Limpopo province in the Ba-Phalaborwa area. It typically grows in woodlands, on sandy soils.

ECOLOGY: The flowers of the marula tree are pollinated by various insects. Game animals such as elephants, giraffe, antelope and zebra browse the leaves of the tree. As a prolific fruit bearer, various living organisms including humans feed on the marula fruits. The larval stage of the beautiful green African moth Argema mimosae feeds on marula leaves.

USES: A decoction of the bark treats dysentery, diarrhoea, rheumatism and has a prophylactic effect against malaria. The bark is an excellent remedy for haemorrhoids. Roots and bark are also used as laxatives. A drink made from marula leaves is used for the treatment of gonorrhoea.

Sometimes one finds a tree with a wound, probably caused by a traditional healer or someone who collected material for medicinal use. The wood is used for furniture, panelling, flooring, carvings and household utensils like spoons. The inner layer of bark makes a strong rope. Drums and yokes for certain animals are made from the wood of this tree. In Namibia some people use the wood for sledges. Boats are also made from the trunk. Red-brown dye can be produced from the fresh skin of the bark. The gum, which is rich in tannin, is mixed with soot and used as ink.

GROWING: This tree grows easily from seed sown in washed river sand in spring. It can also grow from a truncheon planted in the early spring. It is fast-growing, with a growth rate of up to 1.5 m per year. This tree is very sensitive to frost and grows best in frost-free areas under warm conditions. If planted in areas where there is mild or occasional frost, it must be protected at least during the first few growing seasons. It would be wise to plant it on the northern side of a building where there is always enough light, for example.

APPEARANCE: They are deciduous trees that can grow up to 18m tall. The marula tree is a single stemmed tree with a wide spreading crown. It is characterized by a grey mottled bark. Marula trees are dioecious – the male and female trees are separate. One can usually spot the trees by the gathering of animals below them – warthogs, waterbuck, giraffe, kudu and elephants all assemble beneath the dappled branches in search of fallen fruits.

FLOWERS, FRUIT AND LEAVES: Male and female flowers are borne on separate trees, the flowers of male plants producing pollen and the female flowers producing the fruit for which the tree is so well known. The marula fruits are an excellent source of vitamin C – they're approximately the size of a small plum, fleshy and pale yellow-green in colour. The leaves have a watery- latex consistency and produce a strong, resinous smell when they are crushed. They are also compound and divided with a terminal leaflet.

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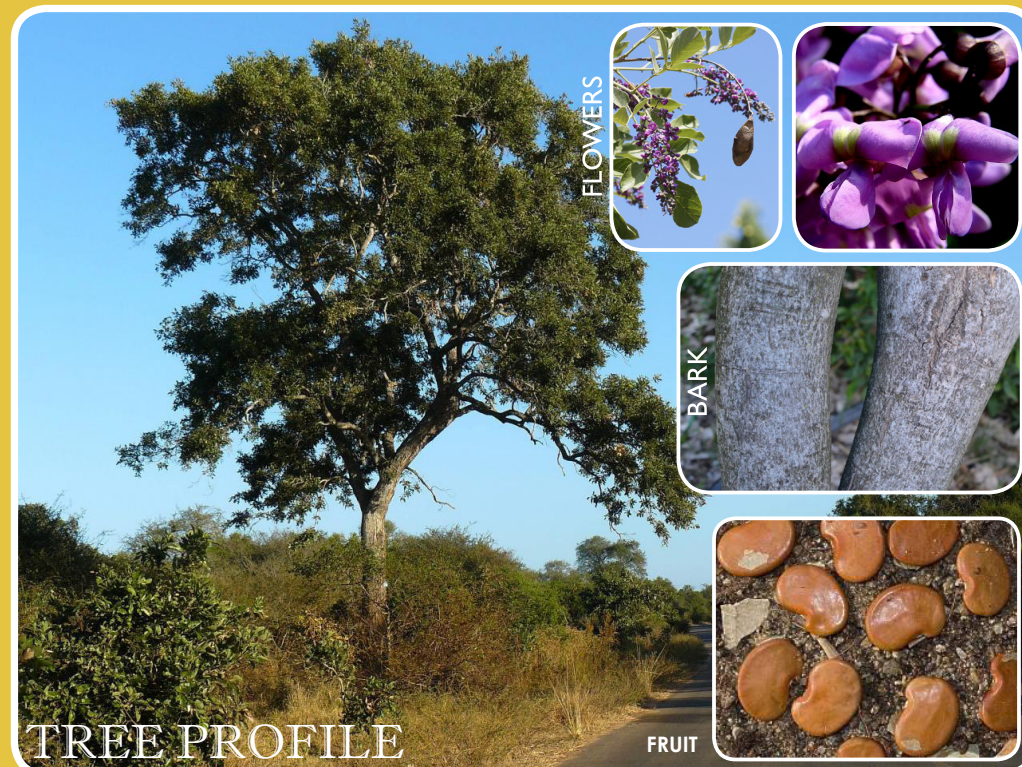QR CODE READER FROM APP STORE

10 Benefits Of Marula Oil

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2 PHILENOPTERA VIOLACEA — APPLE-LEAF

FLOWERS

BARK

FRUIT

TREE PROFILE

FACTS AT A GLANCE

SCIENTIFIC NAME: *Philenoptera violacea*
COMMON NAME: Apple-leaf
SIZE: Medium to large tree- up to 15m
WATER REQUIREMENTS: Drought tolerant
LEAVES/FLOWERS: Leaves are large, hard with a rough texture, shiny above and grey-green underneath. Flowers are white and pink to deep violet, scattered and sweet scented
FEATURE: It is also known as a rain tree, as the ground around the tree is often damp, a result of falling secretions from spittle-bugs that thrive on the tree
MAINTENANCE: Low maintenance

DESCRIPTION

ORIGIN: South Africa is home to three species of Philenoptera, which are found in four of its provinces namely Limpopo, Mpumalanga, KwaZulu Natal and Eastern Cape. The apple-leaf tree is distributed in three provinces of South Africa and they include Limpopo, Mpumalanga and KwaZulu Natal. The tree is often found in low-altitude woodland and on the banks of seasonal streams. It prefers sandy and alluvial soils.

ECOLOGY: The apple-leaf tree is a frost sensitive and drought resistant.
The tree is browsed by a variety of game animals such as elephants and giraffe. Its sweet scented flowers and nectar attract a lot of bees and it is often used by cavity nest birds such as barbets, rollers and owls.

USES: The wood of *P. violacea* is often used to make carvings and tool handles as well as dugout canoes.

The tree is also used for traditional remedies where most parts of the tree are used for gastro-intestinal problems and powdered root-bark is used to treat colds and snake bites.

GROWING: Apple-leaf tree is a good garden subject. Propagation of the tree is by seed. The seeds must be first soaked in hot water, left overnight and planted the next morning in seedling trays.

Placing a clear glass over the seedling tray can speed up germination. Plants should be kept in a shade for three to five weeks before moving into full sun. Although it grows slowly, it is an interesting ornate tree which gives a stunning display when in flower.

APPEARANCE: This tree grows up to 15m tall and has a wide-spreading canopy, dense rounded crown. The main stem is tall, straight and bare, occasionally bent and twisted. The bark is grey and flaking on older branches and stem, but smooth, light grey and covered with dense hairs on younger branches.

FLOWERS, FRUIT AND LEAVES:
Flowers are scattered and vary from white-pink to bluish-pink and deep violet. Flowers carry a sweet scent and appear between September and December. Fruit is a flat pod, non- splitting, relatively large, hairless with tapering at both ends. Leaves are large, hard with rough texture, glossy above and pale green or grey green underneath.

The apple-leaf tree

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National Arbor Month

The history of Arbor Week

The idea for Arbor Day originally came from Nebraska. When visiting the state today one would not find evidence that the area was once a treeless plain. Yes Yes it was a lack of trees there that led to the founding of Arbor Day and later Arbor Week in the 1800s.

Arbor Day in South Africa

Historically, South Africa did not have a culture of tree planting and it was in the 1970s that a real need to promote tree planting was recognised. The concept of National Arbor Day ensued from the 1973 Green Heritage Campaign.

Following requests from various organisations and institutions, the former Department of Forestry obtained approval in 1982 to celebrate National Arbor Day from 1983. In 1996, the Minister of Water Affairs and Forestry, emphasising the importance of tree planting in South Africa extended Arbor Day from one day to week.

It has since been celebrated in South Africa from 1-7 September annually. In 2018 the Minister of Agriculture, Forestry and Fisheries took a resolution to extend arbor week to arbor month is a national campaign initiated.

Arbor Month is a national campaign initiated to celebrate South Africa's trees and to raise awareness about their importance. The theme for Arbor Month 2019 is "Forest and Sustainable Cities". This year the department would like to ask you to:

> Protect our indigenous forests; help prevent veld and forest fires; plant a tree to green our country, mitigate against climate change; plant indigenous trees that save water; use water conserving methods when planting trees and integrate fruit trees into your food gardens.

How can you help to protect our indigenous forests?

Our forests are under threat from people who are careless with our heritage. Never cut down a tree in a natural forest and do not remove an animal or living plant without permission. Explain to others the importance of protecting our natural places.

How can you help to prevent forest fires?

Each year veld and forest fires destroy thousands of hectares of trees and grasslands. Many people are injured and even killed. Animals are endangered and people's livelihoods are destroyed. These fires also damage our economy by destroying valuable assets.

Do not light fires in the open air during winter time when it is dry. Do not be careless with flammable material. Report fires to your fire brigade or police station as soon as possible. Never drive or walk into an area that is on fire. If you are a landowner, it is recommended that you become a member of the local Fire Protection Association. Ask your local forestry office for details.

How about planting a tree?

Many places in South Africa are barren and lifeless because they do not have trees, gardens or plants. In the past, trees were not planted in township areas while suburbs have usually had trees growing for many years. We have to plant trees in every town, city and school in South Africa. We need to plant a tree with every new home.

We need to ensure that every clinic has trees. You can help by planting trees at home or working with your school, church, or local government to plant trees. Integrating fruit trees in your food garden can address household food security. Remember we are a water-scarce country, so use methods that conserve water to irrigate your trees.

National Arbor Month serves to promote awareness for the need to plant and maintain indigenous trees throughout South Africa, especially for the many disadvantaged communities who often live in barren and water stressed areas. It further intends to:

- **Raise awareness of South Africa's urban and rural greening initiatives.**
- **Promote better understanding of trees, particularly indigenous trees and fruit trees.**
- **Highlight the important role trees play in sustainable development and the livelihoods of people and their environment.**
- **Encourage communities to participate in various greening activities within their own surroundings.**

Furthermore, the aim is to encourage people to plant trees at various places so that they are not lost to us and future generations.

Indigenous trees are a heritage to our society. They serve various purposes in our lives and in the lives of other living organisms. They provide important habits for survival of bird, animal and insects. Our indigenous trees form an important part of the tourist attraction areas of South Africa.

The following are some of the benefits derived from trees:

Trees benefit our lives, we may consider a number of products that we derive from trees such as building materials, paper, fibre, oils, gums, syrups, pharmaceutical products, fruit and nuts. We also recognize the visual benefits we reap from trees as leaves change colour from season to season, and small trees grow into larger trees.

Trees provide more than just products and ornamental beauty; they offer an almost endless list of environmental and economic benefits, some of which are crucial to our well-being.

Trees produce oxygen while using up carbon dioxide. Some scientists contend that the over-abundance of carbon dioxide in the earth's atmosphere will lead to the "greenhouse effect". Smog can be filtered by trees, ash, pollen and dust maybe trapped by a tree's foliage.

Soil is conserved by trees; falling leaves and needles decompose providing rich nutrients for the soil. The roots of trees prevent soil erosion and tree canopies reduce flooding and rainfall run-off.

A tree's various parts absorb sound waves, deflect the waves in different directions, and thereby reduce the sound's intensity. Properly placed evergreen trees act as a windbreak and an insulator. In the winter, this can translate into lower home heating. Deciduous trees will if strategically placed provide shade to a home's roof and outside walls, can help reduce air conditioning costs in the summer.

Property values are enhanced by the beauty and charm of the landscape offered by trees. They break up the monotony of masonry, cement, metal and glass along city streets and sidewalks. Areas with trees often attract more people (e.g. tourists, customers). Recreational places benefit from the presence of trees.

Trees are a valuable resource providing both environmental and economic benefits. By planting even a single tree, or million trees the country can make a difference. Each tree will help to contribute to a cleaner air, lower energy costs, greater protection of our soil and water supplies, reduced noise levels, contribute to food security and a more ambient environment in which to live.

In addition to the planting of trees, emphasis is made to highlight the need for the conservation of forests and in particular indigenous trees that are threatened by extinction.

To this end, the Arbor Month campaign will promote planting of three indigenous species that have been identified and named as trees of the year. These trees are selected from commonly found trees and the rare tree species.

For 2019 the following two tree species have been selected as **trees of the year:**

Sclerocarya birrea: Marula (Common name: English)

This tree has been selected from the list of common species.

Philenoptera violacea: Apple-leaf (Common name: English)

This tree has been selected from the list of rare/uncommon species.

Champion Trees Project

The purpose of the Champion Tree Project is to identify and protect trees that are of national importance and worthy of special protection, due to their remarkable size, age, aesthetic, cultural, historic or tourism value. Similar projects have been established in several other countries, but this is the first of its kind in Africa.

Nomination forms with guidelines for the nomination process are available from the DAFF. Every nomination cycle starts on 1 August each year, and ends on 31 July the following year.

Seventy five trees and groups of trees have been declared by the department as Champion Trees, based on criteria such as size, age and historical value. More trees have been shortlisted, and will be declared during 2019.

These trees are all protected under the National Forests Act of 1998. They include the Tsitsikamma Big Tree along the Garden Route, the Post Office Milkwood tree of Mossel Bay, the Sagole Baobab tree in Limpopo and Camphor trees planted at Vergelegen Estate in the Western Cape three centuries ago.

The oldest planted tree in South Africa is a Saffron pear, brought from the Netherlands and planted in the Dutch East India Company's gardens in Cape Town more than three centuries ago.

Historic trees include a Poplar tree, which served as a landmark for refugees during the apartheid regime who found a safe haven in the Johannesburg house of Ruth Fischer, the daughter of Bram Fischer, who was a founding member of the South African Communist Party.

A group of international and local tree climbers has visited and climbed the champion trees around the country, contributing to more accurate height measurements, and installing nesting boxes for the rare Cape Parrot in some of the large champion trees that occur in natural forests.
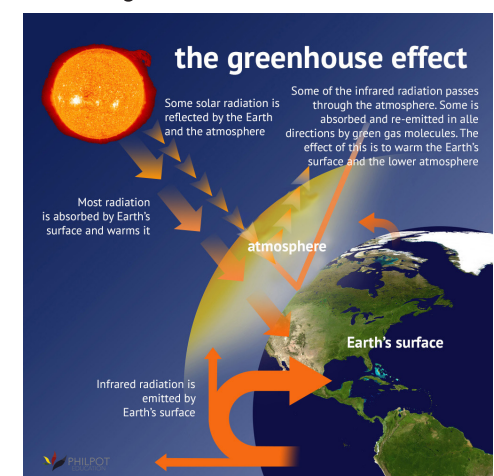
All the trees were also visited by a professional photographer, to create a proper photographic record of the trees, which will also be used for the publication of a book on the champion trees within a year.

Trees and Climate Change

It is now well known that global climate is changing and that it is likely to continue changing for many years to come. Climate change brings about unusual weather, droughts, floods, melting of the permanent ice of the north and south poles as well as rising ocean levels. All this is the result of air pollution caused by human activities.

One of the main pollutants responsible for this phenomenon is the greenhouse gas Carbon Dioxide (CO_2). Greenhouse gasses have the ability to trap the sun's heat in the atmosphere and so prevent the earth from cooling down.

This is referred to as the greenhouse effect, which is important for maintaining life on earth, but which is also very dangerous when it is enhanced beyond the delicate balance that is required for life on earth as we know it. Carbon Dioxide is emitted when most materials burn and when living creatures breathe.

the greenhouse effect

Green plants are a vital defence against climate change because they have the natural ability to remove CO_2 from the atmosphere and store the carbon as biomass. Trees are especially valuable because they produce wood, in which large quantities of carbon is locked up for many years.

To put this into perspective; one hectare of forest growing at the rate of producing 10m3 of wood per year will be removing carbon to the equivalent of 14 million m3 of air. One can visualise this as a column of air 1.4 km deep over an area of forest the size of two soccer fields.

Do keep in mind that trees do not all grow equally fast, and all forests are not equally productive as carbon sinks. Trees in urban environments and commercial forestry plantations are generally quite fast growing and are therefore active carbon sinks. Under favourable conditions some plantations can achieve average annual growth rates of 20m3 per hectare.

Forests and the Economy

According to Forestry South Africa, forestry and downstream processing industries provide 158,000 jobs, predominantly in rural areas where there are high levels of unemployment. Given this, no less than 692,000 people are dependent on the industry for their livelihoods.

The contribution to the economy is estimated at R45.5 billion, R29 billion of which is exported. This translates to *9.0%* of Manufacturing GDP and *10.1%* of Agricultural GDP, including pulp and paper. It is through commercial plantations that timber is produced for construction, mining, poles, charcoal, furniture, pulp, paper and cellulose production and other timber beneficiation enterprises.

THEME: Forests and Sustainable Cities

The theme for the 2019 Arbor Month Campaign is Forests and Sustainable Cities. Investing in green spaces can help transform cities into more sustainable, resilient, healthy, equitable and pleasant places to live.

If planned and managed well, cities can be great places to live, but many urban developments cause environmental havoc - ultimately leading to problems such as high temperatures, flooding, and air pollution. The cost for citizens is deteriorating well-being. The costs for the planet include increased greenhouse gas emissions, the degradation of soils and waterways.

More than half the world's population now lives in cities, and by *2050* almost *70%* of the world will be urbanized. Although cities occupy only three percent of the Earth's surface, they consume *78%* of energy and emit *60%* of carbon dioxide.

Woodlands, forests and trees in a city and on its fringes perform a wide range of vital functions - such as storing carbon, removing air pollutants, assisting in food, energy and water security, restoring degraded soils and preventing drought and floods. In a medium size city, for instance, urban trees can reduce the loss of soil by around 10,000 tons per year.
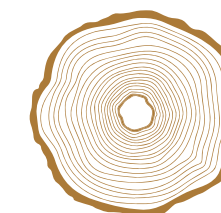
By shading and cooling the air, forests and trees in urban areas can reduce extreme temperatures and mitigate the effects of climate change. Indeed, trees properly placed around buildings can reduce air conditioning needs by *30%*. In cold climates, by shielding homes from the wind, they can help save energy used for heating by *20-50%*.

Urban and peri-urban forests can increase the resilience and quality of watersheds and water reservoirs by preventing erosion, limiting evapotranspiration and filtering pollutants. And planting fruit-bearing street trees can increase the availability of food within cities.

Partnerships in Arbor Month and Greening

Tree planting, including the development of parks and recreational facilities can be expensive when done on a large scale. For this reason, it is necessary for good partnerships between government, the corporate sector, non-government organisations and communities to work together in greening our country.

The Department of Agriculture, Forestry and Fisheries has established a good working relationship and partnership with Total South Africa in greening our country and promoting Arbor Month. The partnership has been in place for over ten years and has resulted in numerous projects being initiated.

These include small community parks, orchards, school greening projects, assisting with water tanks where there are problems with water. Total South Africa supports the Million Trees Programme and the Arbor City Awards Competition. Through their support, many of the greening interventions have been realised.

This shows that working together we can take greening forward in this country. This function should not be seen as the government's role alone.