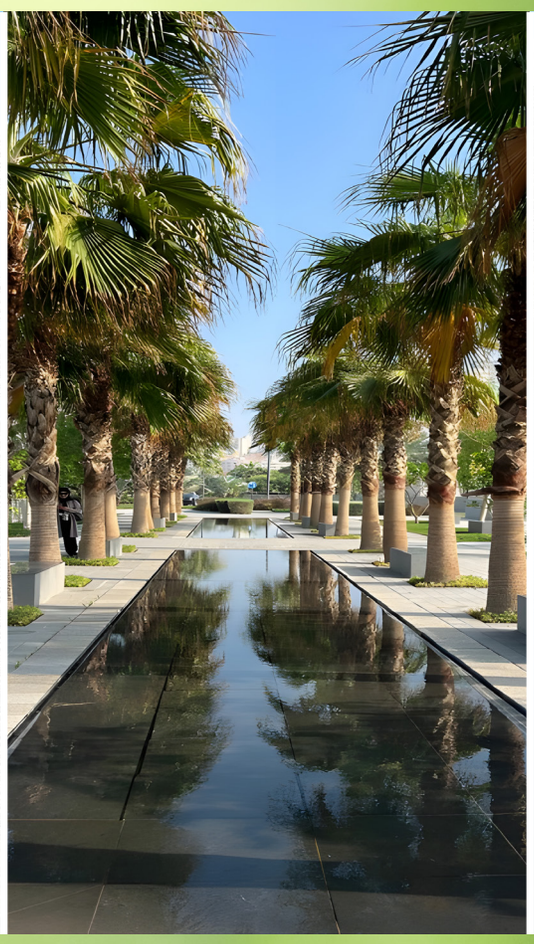
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معهد الكويت للأبحاث العلمية
KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH

Trees and Shrubs Grown in Kuwait and their Uses in Landscaping


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Forword

Managing and developing green spaces in dry areas like the State of Kuwait presents interesting as well as daunting challenges because of the extreme climate with severe environmental constraints and limited water resources. The species that are chosen should have the ability to exist in such environments and be environmentally friendly. This book is a key tool that quite encouragingly addresses these challenges and even resolves them using proficient and competent professionals, which is “Trees and Shrubs Grown in Kuwait and their uses in Landscapin.

About authors\’ Practice: Over 30 years of career in landscaping research and dealing with publications. The first author has participated actively in both the designing of government large landscape works and especially in the arid environment plant research development. They have not only researched but also taught practical classes including residential and commercial landscape design in Kuwait.

The first section highlights the characteristics of arid land and the other important primary functions of trees and shrubs namely: cutting down air pollution and enhancing the urban landscape. It goes on to discuss the ability of the different species to withstand the harsh climatic conditions in Kuwait.

The second section of this dissertation gives a review of the complex relationship between climate and soil with plant growth in Kuwait. This gives insight into how the three interact with each other and the impact they have on the landscaping endeavors› success. These are the kinds of relationships that are going to be very important in selecting the right plant species and in ensuring the success of long-term survival and growth.

The third part is a critical checklist of the woody plant species that have been successfully introduced and cultivated in Kuwait. This checklist will be of inestimable value to landscape specialists, garden professionals, environmentalists, and students interested in the description of plant characteristics and landscape various uses in detail.

The subjects filling the fourth section are based on critical aspects of the landscape, especially for Kuwait. Among those, invasive species spreading in the Kuwait environment comprises the criteria for choosing woody plants to plant at certain places, planting guidance for trees and greenbelts along roadsides, attributes, and advantages of windbreaks for agricultural areas, what is xeriscaping, mitigation of gaseous pollutants from petroleum, and experts and scientific research playing a role in developing landscaping.

Trees and Shrubs Grown in Kuwait Landscape is much more than a book; this is the distillation of many years of hard work, dedication, and devotion to achieve the best understanding of the natural environment in one of the most severe climates on Earth. It stands out as a beacon for those who seek to create a green, sustainable landscape in Kuwait and other arid regions.

Section 1



The State of Kuwait, being in an arid region, has extreme climatic conditions that require an understanding of other arid parts of the world. The majority of plants incorporated within both urban and natural landscapes in Kuwait are from several continents, chosen for their potential to thrive in Kuwait›s harsh environment. These selections are very important in Kuwait›s National Greenery Plan, which aims at achieving a sustainable and pleasingly attractive environment, with consideration of problems in water economy and promotion of urban greenery.

Characterized by extreme variations of temperatures and scarce vegetation and water supply, arid lands cover areas in Africa, Asia, Australia, and North America. In these demanding environments, trees become invaluable resources for improving environmental quality and the living conditions of cities: providing functions that include not only those of an esthetic nature but also such benefits as temperature moderation, improved air quality, carbon sequestration, and engendering psychological and social well-being. This is indicative of the very significant contribution of urban forestry and green infrastructure toward designing a sustainable city, particularly in extreme conditions, such as in Kuwait.

Based on the resistance of the tree species to various biotic and abiotic factors, such as drought, salinity, soil pH changes, windy conditions, and microbial activity or pests, they survive in Kuwait. Classical species would be Nerium oleander, Ziziphus jujuba, and Eucalyptus. Adaptability ranges from deserts to coastal lagoons. Sufficient knowledge of tolerance in respective species equips one to select trees that survive in the climate and urban structure of Kuwait, thus contributing to a successful landscaping scheme.

The history of tree planting in Kuwait that dates back to the 1950s includes the introduction of palms, sidr, and Acacia pachyceras (Talha) for the improvement of the physical environment and shading. Plans were made in 1988 to implement the National Greenery Plan for establishing greeneries and beautifying urban landscapes. Their current status represents collective thinking on not only ecological benefits but also nurturing livable communities by reducing the urban heat island effect and supporting biodiversity.

Kuwait can be divided into three main geographical areas: its coastal region, urban centers, and vast interior deserts. As far as the urban and coastal areas allowing for the planting of the majority of amenity trees are concerned, these two areas have mild climatic and soil conditions, whereas deserts represent grave hardships. Such species can well adjust in the Kuwait environment, spreading in the Gulf, and provide really important learning lessons for the broader regional greening efforts.

To become resilient and livable, however, special emphasis has to be put on the integration of sustainable landscaping practices, guided plant selection, and principles of urban forestry into the enhancement of urban ecosystems within communities to move from Kuwait›s passive «approach to a live scenario» that actively accommodates such demands for sustainable lifestyles.

Climate, Soil, and Plant Interactions in Landscaping



Dynamic Interdependence of Climate, Soil, and Plants. The relationship between climate, soil, and plants can be characterized as fairly dynamic and interactive. Climate is considered the most important determinant of plant distribution-more broad ecological boundaries. For instance, the distinctive interaction between deciduous forests and grasslands is one of the clear manifestations of how climate determines species composition and ecosystem development. The course toward climatic climax taken by the environmental conditions within a habitat underlines long-term climate patterns and soil properties as important determinants in plant evolution.

Weather and Climate: Their Roles in Plant Growth. Weather is the temporary atmospheric condition that usually changes every day or every hour, whereas climate is considered to be the average long-term condition. The most critical climatic factors for plant growth are temperature and precipitation, and temperature acts directly on biological activity. Plant growth stops when temperature becomes higher or lower than certain threshold values, with maximum rate of growth being possible in a limited temperature range.

Soil Properties and Plant Development. The chemical and physical properties of the soil play a very important role in plant growth. The adaptation of date palms and acacias to arid deserts can be considered as an outcome of the interaction between climate and soil conditions in arid regions. Soil pH, salinity, and its physical properties like texture and structure are the key factors in plant growth. Acidic soils dominate in areas of high precipitation whereas alkaline soils are dominant in arid regions. Although some plants can tolerate a broad range of pH, the availability of essential nutrients and water is critical to sustain growth.

Salinity and Water Dynamics in Arid Soils. The salinity of the soil ranks high among the menace in plant growth in dry and semi-arid regions because of osmotic pressure inhibiting the uptake of water by plants. Regions with poor precipitation allow for the unreasonable build-up of salt, detrimental to vegetation. Physiological properties of soil could include the sizes of particles and texture that, in turn, control the rate of retention of water and root penetration. Sandy soils, for instance, should be added to organic manures and compost to improve their fertility and moisture retention.

Water Management in Arid Landscapes. A feature common with the arid landscape is that water is scarce and the need for effective irrigation together with preservation of water is core. In deserts, it is difficult to do decoration due to very high rates of evaporation and low precipitation. Landscaping practices can be used in the creation of a microclimate in an arid setup that will help peel off heat and aridity, hence ensuring many ornamental plants grow throughout the year. The main priority in having plants grow sustainably should be smart irrigation in terms of water management.

Regional Comparisons of Desert Climates and Vegetation. Arid lands around the world show a lot of variation in climate and ecological characteristics. Jordan›s Wadi Rum is part of the larger Arabian desert and features drought-resistant shrubs, and sparsely distributed vegetation adapted to high-temperature fluctuations and less than 100 mm annual rainfall. Although the Sahara Desert in Morocco has milder winters and hence supports greater floral diversity, climatic variation enables the different surroundings to be selected. These differences are being recognized as responsible for the factors that shape desert ecosystems-their regional geography, soil, and climate.

Ornamental Landscaping in Arid Environments. Special care and consideration of soil conditions, plant adaptability, and irrigation needs are considered for planting ornamentals in arid areas. Usually, the soils in deserts are sandy, low in organic matter, and cannot support the growth of exotic species without amendments. Organic material addition improves water retention, structure, and nutrient availability, hence making these soils capable of sustaining plant growth. Long-term research has shown that in desert areas, native plants often thrive after 2 to 3 years of careful watering and management.

Woody Plants Species Compendium in Kuwait



Compendium of Woody Plant Species in Kuwait.

This is a very exhaustive view of various tree and shrub species that prosper around Kuwait in very hostile surroundings. The book will be an important reference for horticulturists, landscapers, researchers, environmentalists, and educators. The present work describes woody species on the basis of nature, landscape adaptability, and landscapes that showcase coastal zones, lowland regions, and desert areas.

This research consisted of many field trips and surveys devoted to the identification of invasive plants and shrubs in Kuwait. These included visits to well-known locations such as Al-Shaheed Park, Boulevard Garden, all waterfronts, the Scientific Center, the Urban Demonstration Garden at the Kuwait Institute for Scientific Research, Ahmadi Garden and residential neighborhoods. Each entry incorporates common and scientific plant names and descriptions of origin, landscape usage, type of growth pattern, and specific morphological features such as flowers, fruits, and foliage. In addition, the compendium highlights the salinity tolerance of the plants, an important hallmark for species cultivated in brackish water conditions in Kuwait.

Taxonomic Classifications and Morphological Characteristics

Plant families are described based on their place in taxonomy and their unique features giving us a way to grasp how plants are related and what they do in nature. Some key families in this list are:

Amaranthaceae: This group has tough herbs, shrubs, and trees that do well in dry areas. Atriplex halimus is one example. •

Arecaceae: These are palm trees with trunks that don›t branch and big leaves. Bismarckia nobilis and Phoenix dactylifera belong to this family. •

Fabaceae: This family plays a big role in the economy. It›s known to fix nitrogen and has typical pod-like fruits. Acacia arabica, Delonix regia, and Tamarindus indica are part of this group.

Myrtaceae: Certain species of Eucalyptus are included in the myrtle family and are extremely aromatic because of their essential oils.

Moraceae: Some fruit types are Ficus religiosa and Morus alba, belonging to the figs and mulberries within this family, respectively.

Sapotaceae: These are tropical trees with edible fruits and good timber. Aromatic plants with essential oils, such as Eucalyptus camaldulensis.

Survey Insights and Observations

Field observations emphasized the adaptability and functional uses of these plants in landscaping and biodiversity enhancement. Practitioners noted the performance of introduced species under varying environmental conditions, particularly their tolerance to brackish water irrigation with salinity levels averaging 4,000 ppm (Total Dissolved Solids, TDS). Remarkably, some species, like Tamarix aphylla, demonstrated resilience at salinity levels of up to 9,000 ppm. This adaptability underscores the importance of integrating hardy, drought-tolerant, and salinity-resistant plants into Kuwait's landscaping practices.

Contribution to Sustainable Landscaping. The Compendium of Woody Plant Species not only documents the rich diversity of Kuwait's woody flora but also serves as a guide for sustainable landscaping. By promoting the use of adaptable species that thrive under resource-limited conditions, it supports biodiversity conservation and ecological stability in arid environments.

Acacia arabica

Arabic gum tree

Family: Fabaceae

Native to Africa, the Middle East, and the Indian subcontinent.

Location in Kuwait: Water Front Urban Demonstration Garden (UDG-) Salmiya (KISR)





Characteristics: *Acacia arabica* is a medium-sized tree, attaining a height of 7 - 15 meters. It has a compact, sappy crown with rough, dark bark fissured. The long, straight thorns may be white or light gray. Leaves are bipinnate, small leaflets quite characteristic of an Acacia species. Acacia arabica develops a long-curved seed pod, flat with several seeds in it.

Soils, Salinity, and pH: The plant is a kind of tree that prefers well-drained soils. It tolerates a large range of pH, from slightly acidic to strongly alkaline; thus, this tree is recommended for areas that face salinity problems.

Landscaping Uses: It is very well suited as shade as a shade plant in hot climates. Acacia arabica can also serve as a windbreak for tender plants or crops in rather windy areas, having a dense crown and stout structure. Other than the practical uses of the plant, it is aesthetically pleasing, with its typical feathery foliage and bright yellow flowers, followed by very dark pods. It can be planted alone to add visual excitement to large gardens or on the roadsides. It is a nitrogen-fixing plant and is ideal in areas with poor-quality soil. It also has tony branches and is often planted as natural fencing or boundary in more spacious landscapes and rural landscapes. It attracts and provides habitat to numerous species of wildlife. As an added benefit, its flowers attract pollinators, thus good for wildlife-friendly landscapes. It has a very deep and wide root system, which prevents soil erosion in such places, especially where the area is hilly or must face flood conditions. Acacia arabica is among the species planted in most landscaping projects that help prevent land degradation by stabilizing the soil.

Acacia cognata

Bower wattle, river wattle

Family: Fabaceae

Australian native.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: This is an exceedingly graceful drooping tree with extended slim curving leaves, that give a delicate almost plume-like appearance to the foliage. It attains a height of 10 meters although smaller varieties are common. Leaves, or phyllodes, range in color from light to dark green and appear thin. Tiny pale yellow to cream-colored flower clusters, almost round, occur in spring. Its bark is smooth, grey to dark brown, with the possible development of longitudinal furrows and rougher with age. Soil, Salinity, and pH

Soil, Salinity, and pH Requirements: It does not favorable moisture regime, particularly in waterlogged soils because it leads to root rot. It does fairly well on all classes of soils and at a pH that is moderately acidic to moderately alkaline.

Landscaping Uses: Acacia cognata is used in landscapes because of the characteristic of weeping foliage and the serpentine or willow growing habit. It is small to medium-sized in height to provide an open look without losing the elegance of the plant in garden beds or courtyards with nice flowing movement and textural differences. Further, this plant assumes a very important role in landscaping especially when people are making informal barriers or hedges because it forms a good cover. Dwarf varieties do pretty well in pots and containers; these can be relocated on patios and balconies or used for decorating small urban gardens. This plant is suitable for xeriscaping or any gardens that would not demand so much water. This thrives in salty air environments and sea wind areas making it suitable for planting at beaches or homes with close proximity to the sea. Like all other acacia species, Acacia cognata also favors bird and insect pollination and is thus a good addition to native or wildlife garden planting.

Acacia salicina

Willow or Cooba

Family: Fabaceae

Native to Austaralia.

Location in Kuwait: Al Shaheed Park, Kuwait city.



Characteristics: It is a medium-sized tree that grows up to an average width of 5 to 12 meters. Because of their long thin branches that droop, it has a weeping habit somewhat similar to willow trees. The leaves, or more correctly phyllodes, are long, lanceolate, dark green to bluish green, and up to 20 cm long. The drooping leaves give it a tender ornamental appearance. It produces flowers white to creamy yellow and has a highly fragrant bloom that occur in the fall throughout winter. This Acacia is also capable of living in alkaline land. It has blue-white flowers and grey-green foliage. Distinctly, the outside part of the trunk has a remarkable characteristic; it is glaucous in the early stages while in developed trees it turns out to be rough with fissure and greyish brown. It can be grown along the Kuwait coast as a shade tree. The tree yields up to 45 years of life of the tree if it is planted under proper conditions.

Soils, Salinity, and pH: The Acacia salicina lives in a variety of soil conditions ranging from pure sand to heavy clay containing loam. It naturally grows best in deep, well-drained loamy, and clayey soils though it survives in marginal soils bearing slight salinity.

Landscaping Uses: Acacia salicina referred to as the willow wattle is a tree with a solution in several aspects of landscaping. Because Acacia salicina has very dense foliage this makes it a good shade tree and thus can be planted in parks, gardens as well as much larger areas. This is fast-growing tree that can exist almost in all type of climates, it also acts as a shelter belt in windy regions to shield houses or farms. It has an extended root system thereby assisting in anchorages of the soils; this makes the plant useful in checking on soil erosion, especially on the inclined planes and areas that can easily undergo soil erosion. This tree once planted makes it through the dry spells, as such it is suitable for xeriscape gardens or places where water is scarce. This tree has bird and wildlife attraction due to shelter and feeding values within the landscape, therefore a value to the landscaping project. This is an ornamentally attractive plant having thin drooping branch systems and the aspect of its decorative rough bark and is therefore suitable for landscaping in the urban setting. The established plants have few demands; thus, are ideal for low-upkeep landscaping schemes. In the present time, it is being utilized as a street lining plant or avenue planting plant in public places. For this reason, this species of Acacia salicina is a real asset to many landscaping projects, particularly in arid and semi-arid regions.

Albizia lebbeck

Woman's tongue

Family: Fabaceae

Native to tropical and subtropical regions of Asia and Africa.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: Is a large deciduous tree, a fast-growing one, and may live up to between 15 to 30 meters tall. It has a broad canopy, spreading outwards to give a good shade, which makes the park select this tree in waterfront and inland urban areas. The leaves are bipinnate, that is a compound structure of small, elliptic leaves that appear to have feathers when complete. The foliage is bright green, and the density of feed parts corresponds to the vegetation type. The tree bears bunch of sweet-scented flowers, small and greenish white to yellowish which appear like balls of wool. These flowers are common during late spring to summer in Kuwait environment. The tree is followed by flat, oblong seed pods which are pale brown on maturity. These pods are some 15 to 30 cm long and hold several seeds. The pods are unique because used make a rattling sound when shaken by the wind. The bark is grey, roughening to deep grooves with age.

Soils, Salinity, and pH: Albizia lebbeck thrives well in well-drained soils, but it is fairly adaptable to poor, hard settings, and even to moderately saline soils not exceeding 6000 ppm. The tree grows well under full sun exposure, and its watering is well done, it is recommended for areas of low rainfall.

Landscaping uses: Albizia lebbeck is spreading with large foliage canopy which can be used as ornamental trees for planting in gardens, parks, and roadside plantations. A tree of good ornamental value, its feathery leaves, and creamy scented flowers enhance the looks and feel of a landscape. This tree grows fairly tall and thick in canopy; hence it is often planted as a windbreak on open land or nearest the compound wall. The tree grown for its aesthetic value in urban and countryside and beautifies street avenues and parks. It has that wide root network that allows it to be used in washing away soils that have been eroded or affected in certain areas. It further provides noise and dust screens, especially where the trees are grown near the main highways or other busy means of transport. It is a worthy tree in ecological and permaculture projects, where its effects enhance soil fertility because it is a nitrogen-fixing tree. These qualities make Albizia lebbeck well preferred for both practical and ornamental horticultural activities.

Argania spinosa

Argan

Family: Sapotaceae

Native to the semi-arid regions of southwestern Morocco and parts of Algeria.

Location in Kuwait: Water Front Urban Demonstration Garden (UDG-) Salmiya (KISR)



Characteristics: It's a slow-growing thorny tree that ranges between 8 and 10 meters tall with a broad top as well as twisted branches to make it look very old. Foliar appendages are small, narrowly oval, dark green, and are often found grouped at the end of a branch. Its foliage has a low transpiring power hence minimizes water loss; it is therefore suitable for xeric communities. It has small yellowish-green flowers which are not so conspicuous. The fruit of the Argan tree is a small round green to yellow-brown fruit measuring between 2-4 cm in diameter. There is a hard nut whose cavity is stuffed with seeds surrounded by oil in the middle of the fruit. The bark of the tree is greatly thickened and has a rough and is normally grayish brown to protect the tree from the harsh conditions prevailing in its natural habitat.

Soils, Salinity, and pH: It seems to do best on light-textured, sandy soils; however, it is fairly tolerated in poor, nutrient-depleted soils. It was first planted in Kuwait at the Waterfront Experimental Station. This tree required very stringent horticultural management practices.

Landscaping uses: With an emphasis on the production of oil, the tree also has a very good possibility for use in landscaping especially in regions that are arid and semi-arid. Due to their drought resistance, argan trees should be preferably used in xeriscaping, that is landscaping that does not require frequent watering. With roots running deep into the ground, this tree plays an important role in checking erosion, especially in areas with poor or sandy type of soil. It anchors and shields the earth against development into a desert-like environment. Argan trees are medium to large trees with a fairly large crown of foliage that offers people and animals protection from the sun, thus these trees are good for planting in parks, gardens, or in any place where there's a need for shade space. Mature Argan trees have grooved and gnarled trunks, which combined with the dense green canopy, make the tree globally attractive for desert or Mediterranean Climates It can be used as a windbreak for areas with high wind activity to protect crops, properties, and other plants. The flowers and fruits of the tree attract bees and other insects increasing the revolution of the area. Argan trees can hardly be compared to other crops that need constant attention now and then, which makes it ideal for locations where long-term care is unachievable. These characteristics of Argania spinosa make this tree valuable in modern landscaping, especially in hot and dry areas where other tree species fail to grow.

Atriplex halimus

Saltbush

Family: Amaranthaceae

Native to the Mediterranean region and parts of North Africa.

Location in Kuwait: KISR Main Campus, Shuwaikh.



Characteristics: It is a persistent growing shrub that is considered as being of perennial with heights reaching from 1 to 3 meters. It is a tree of dense growth with numerous branch lets. The leaves are small and can be oval or lanceolate around 3 cm long and 1 cm broad, and silverish due to the dense tomentum. It is one of the characteristics that makes the formation of the plant, and it can fight water in dry climates. The plant has flowers that are small and not pale or vivid and these are normally yellow green.

Soils, Salinity, and pH: Atriplex helimus is well adapted to saline and alkaline soils; in fact, few other plant species will grow in such conditions. The plant can withstand full sunlight and is extremely adapted to drought conditions therefore is good to be planted in regions with less rainfall. It can also withstand conditions associated with coastal climate which more or less makes it suitable for any coastal region.

Landscaping uses: It›s a very useful plant one that is used in landscaping for it can grow in most hardiness including the semi-arid tracts and the coasts. This plant can easily survive drought situations hence making it suitable for application in a xeriscaping. It is perfect for dry conditions, rocky terrains, or conditions that most other plants would not survive. This plant mainly has strong root systems that are capable of anchoring the soil and thus reducing soil erosion on slop lands, sand tracks, and other coastal areas. Due to its tolerance to marginal saline soils, it can be recommended for use in coastal soils. This characteristic is useful in combating coastal erosion and in the restoration of eroded soils. Due to its thick foliage and shrub-forming habit, this plant can be used as a screen, windbreak, or hedge, especially in areas with strong winds. Wildlife in particular, birds and small mammals feed on Atriplex halimus and hide under the shrub. It also benefits grazing animals due to its edible leaves, which gives it an outstanding use in diversified agriculture. This plant does not need so much attention once it has been planted and will even provide fruit in poor soils with little fertility. This makes it ideal for use in areas that require little or no maintenance, especially in difficult conditions. The plants have silvery-grey leaves which give them a striking effect in a garden and landscape, especially in desert or coastal gardening. It is very useful for enriching drought-resistant flower designs with its texture and conspicuous colors. Atriplex halimus is adaptive to stress conditions in landscaping such as drought, extremities of dryness, or even salinity making it appropriate for sustainable and water conservation landscaping.

Azadirachta indica

Neem tree

Family: Meliaceae

India subcontinent.

Location in Kuwait: Al Shaheed Park, Kuwait city.



Characteristics: It is a tree species that may reach a maximum height of fifteen to thirty meters with a dense rounded crown. The leaves are pinnate with twenty to thirty small pale, green-colored serrate leaflets located on the leaflet margins. The flowers are small and are white to yellow Their scent and arranged in axillary racemes. It's a plant that flowers early in the year, and as noticed earlier, it has certain attributes that are quite desirable for bees and other insects. it has a small oval yellow to greenish drupe and bears one seed only. Externally the bark is rough, grayish brown to olive-brown with a very wide longitudinal fissure.

Soils, Salinity, and pH: Azadirachta indica plant is drought resistant and hence able to grow in a wide range of soils. Neem is somewhat salinity tolerant and grows better in coastal areas.

Landscaping uses: Azadirachta indica has a broad, dense crown which makes it suitable for planting in parks and gardens as well as planting along the roadside in particularly hot regions. A very high growth rate is rather useful as soon as it allows to creation of the necessary shadow in a relatively short time. Neem is extensively grown along roadsides and in urban areas because it endures with polluted air. It aids in the purification of air because it can use carbon dioxide. Neem trees also provide excellent wind shields known as windbreaks due to their canopy, thus sheltering crops, property, and other plants in arid land. One advantage of growing it is that it helps in enhancing the fertility of the soil thus recommended for any environmentally friendly landscaping. Neem has a wide root system that assists in the conservation of the soil, especially on the sloppy and degraded land. It helps to lock the soil in areas where there is likely to be formation of runoff conditions. Neem is universally acknowledged for its medical benefits because the leaves, bark, and seeds of the plant are utilized in the preparation of the herbs. Integrating Neem into community gardening or landscaping with medicinal plants adds a value-added dimension to gardening or landscaping with crops for medicinal use. Neem is, therefore, naturally pest-controlled because the leaves and seeds contain chemicals that are fungicides and pesticides. This characteristic eliminates chemical pesticides hence making it famous for organic farming geography and environmentally friendly gardens. Neem has small but beautiful, dark green feathery foliage and beautiful, white flowers with a distinct fragrance that enhances the ornamental beauty of different landscaping. This tree is rather drought-tolerant in production after it has been established for some time, it can therefore be grown in dry and semi-arid areas where water is comparatively scarce. It likes heat and grows well in soils that have little water supplies. Such characteristics make Azadirachta indica a useful tree for its functional and ornamental purpose in landscaping in areas with high temperature, drought, or poor soil conditions.

Bauhinia Purpurea

«Purple Orchid Tree,» «Butterfly Tree,» or simply «Bauhinia.»

Family: Fabaceae

It is native to Southeast Asia, particularly India and China.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: Generally, grows to 6 m tall x 4 m spread. Large bi-lobed, butterfly, or camel›s hoof-shaped leaves give this tree the common name «Camel›s Foot Tree». Leaves are bright green and smooth. The large, fragrant flowers are orchid-like and typically purple, pink, or magenta, although trees in other parts of the world have white flowers. Long flat seed pods follow the flowers and contain several seeds. Pods can be as long as 30 cm and ripen in winter.

Soil, Salinity, and pH: Bauhinia purpurea is adaptable to an array of soils, including well-drained loamy and sandy soil; however, though it can tolerate clay soils, good drainage is essential for such soils to avoid waterlogging that may inflict damage on tree root systems.

Landscaping uses: This Bauhinia purpurea perennial is highly used in landscaping because of its good looks and manageable size; hence, relatively easy to take care of. It makes the plant a star in the garden of every place when its purple-pink flowers pop out in vibrant colors. Create interest if it›s planted singly in small or large gardens. Its manageable size and graceful shape make it perfect for lining up along streets or driveways, adding to the aesthetic beauty of the city. It brings in a splash of color among the greens, and flowers quite prolifically during fall and winter. The spreading canopy provides partial shade and is hence suitable for patios, walkways, or sitting areas in gardens. It is ideal, especially for areas where the tree of moderate height desired shall not dominate the landscape around it, and it usually grows from 20 to 30 feet tall. The tree could be used as a windbreak if planted in masses or rows. It can be used in roadside plantings with the added beauty to function in separation. Bauhinia purpurea, therefore, enhances the biodiversity of the landscape while serving as the ideal tree for a pollinator garden. The Bauhinia purpurea is ideal to grow in large containers for urban or compact spaces, such as a patio or terrace, where space may be limited to accommodate plants for designs. It works incredibly together with other plants from tropical or subtropical regions, like palms, ferns, or flowering shrubs, in making a lush and exotic garden.

Provide enough growing space, as the canopy spreads to 20-25 feet. Grow the plants with low plants like shrubs, or palms for the best outlook. A deciduous tree, and with a longer flowering period, this provides winter interest in the landscape. Conclusively, Bauhinia purpurea can occur as an adaptable plant with relatively low demands for particular care and, therefore, finds preference in private or communal garden conditions of the warm climate zone.

Bismarckia nobilis

Bismarck palm

Family: Arecaceae

A robust palm tree native to Madagascar.

Location in Kuwait: Boulevard Park, Salmiya.





Characteristics: Can attain a height up to 20m with pale grey, or light brown trunk. Normally the leaves are large, and they are broadly cleft. They can be to a diameter of 3 meters. They often have a beautiful silvery blue hue. They are connected to a long beam and rigid show which gives the leaves pliability. Cilia are giant and tubular; they may be annulated by several bands of gaps of leaf-scar; this tends to give a somewhat nodulous appearance to the stem. The plant has small flowers small, greenish-white, and branched. They are not very large and rounded, shiny black fruit contains a solitary nut within it.

Soils, Salinity, and pH: It can therefore grow on any type; however, it naturally thrives on the type of sandy soils.

Landscaping uses: Because of the big size, silvery-blue foliage, and imposing appearance, the palm can often become the center of attention in large and even monumental landscapes. Because of its size, the plant is most often used in parks, public gardens, or a large commercial estate as an ornamental plant, designed to create an atmosphere of monumental scale and refinement; Its highly symmetrical growth and wide up-right trunk make it ideal for planting along wide avenues, or boulevards and driveways in large estates or luxurious hotel and resort establishments. It combines well with a desert-like garden as it is well-aligned with cactus, succulents, and any plant that requires little water to survive. When grown near gates or entrances or next to gates or driveways, it gives out the much-needed impact because the palm trees are symmetrical and monoform. Especially when the building is a large structure like a hotel, mall, or other government architectural designs it blends easily to smoothen the rigid edges of the structure. Due to the large and very conspicuous size of the palm and its crown shaft freeform, it is used as an example tree on a spacious plain and without view obstructions. Bismarckia nobilis should be used as a focal point in expansive areas or at the front of the property with the idea of an impact in mind. Plant it next to low-growing, water-saving species that will complement its height while returning the aesthetics of the garden. Few plants make such a strong statement as the beautiful Bismarckia nobilis; one plant-or better, two plants-is overwhelmingly more effective than a multitude. The palm is rather culturally attractive and is a great addition to landscape design for tropical and semi-tropical regions. Because of its low attention-seeking but highly striking appearance, it finds wide applicability in extensive suburban and commercial developments.

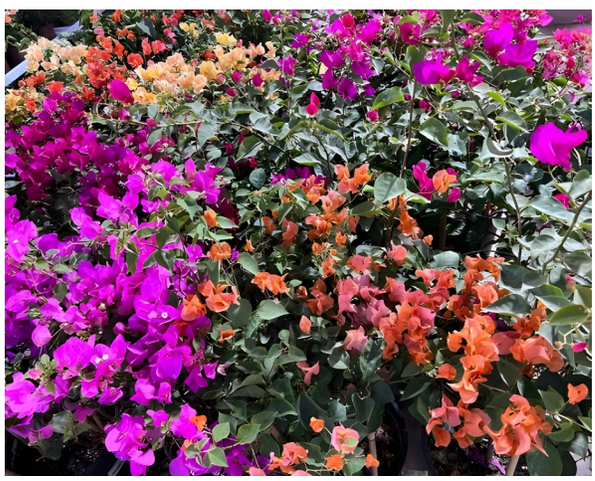
Bougainvillea glabra

Paper flower

Family: Nyctaginaceae

Native to South America.

Location in Kuwait: Water Front Urban Demonstration Garden (UDG-) Salmiya (KISR)



Characteristics: It is an annual trailing vine that can either scrambling or spread out over a large area. There are shrubby, trailing, or small-size tree versions, and how it is trained and pruned will dictate the outcome more often. The height differs to variety and environment, Bougainville belongs to the class of those vines that can be as small as 1 meter and as tall as 12 meters. The foliage is often small, ovate, and bright green but some varieties have leaves with access or coloration. Natural flowers are small tubular usually white or yellow in colors. Single flower species are offered by one type while other species will offer two types of flowers. Nevertheless, the brightly colored sepals outside the flower are responsible for the plant's beautiful structure.

Soils, Salinity, and pH: Bougainvillea glabra prefers a growing medium that has good drainage and can grow in a wide range of soil types, from sand to loam, but poor soil is acceptable as long as drainage is good. It is original from hot areas, and its propagation is damaged by frost.

Landscaping uses: Colorful and adaptive, Bougainvillea glabra, commonly known as «Paper Flower», will beautify any landform. Vegetation is quite effective when given frames like trellises, fences, pergola systems, or walls. Bougainvillea can grow into a dense screen, hedge, or barrier when properly trained and pruned. It can also be used, with appropriate cultivar selection, to separate one area of the garden from another. In the hottest regions, it forms prostrate vegetation with a carpet of colors, which does very well on steep or exposed land. It may be planted in large containers outdoors, on terraces, patios, or balconies, and on roof gardens. Train a vine to grow onto garden arbors or across doors and gateways for a dramatic entrance in a flamboyant way. For its bright color, Bougainvillea is ideal for areas where it can be the focal plant along landscaping or gardens. Coming in different colors, Bougainvillea selects colors that will complement the overall design scheme of the landscape. Pruning is a good way to control plant growth and offers a more tailored appearance. Since this is a vine, use hardy trellises or arbors to hold up the growth-keeping in mind it may be very aggressive and require frequent ties or training. It can get rather large, so plant with adequate spacing. Container planting can be done; therefore, a container size with sufficient room for root development is important. It prefers full sun for good color and growth; hence, this plant would be ideal where a full sun area can be provided. Bougainvillea glabra adds color and a tropical feel to the landscape with minimal upkeep yet high decorative value.

Carmona microphylla

Carmona

Family: Boraginaceae.

Native to South East Asia, particularly China and the Philippines.

Location in Kuwait: Wafra Farms.



Characteristics: This is a plant that grows very slowly, that could reach a height of 3 meters if not pruned, although it is intimately associated with bonsai. The leaves are medium in size, dark green in color, and glossy, they are rough in texture and have a bumpy surface. It is an oval body, sized between one and two centimeters long. The flowers the plant produces are small. It has white star-shaped flowers which bloom perennially in particular if grown in regions with favorable climates, always or almost all year around. After flowering it may produce small. Black to red coloration of its fruits for landscaping or ornamental purpose improvement.

Soils, Salinity, and pH: Carmona microphylla adapts well to any type of soil but it prefers slightly acidic to neutral soil. It is not drought resistant and requires regular pruning to shape, to make it compact, and to encourage branching.

Landscaping uses: The Carmona microphylla, scientifically known as the Fukien Tea Tree, is a small, evergreen shrub that, due to its small size and pretty varnished leaves, is particularly suited for bonsai or landscaping. In other aspects, it is very effective in giving ornamentation to a garden, courtyard, or patio since it bears very small white flowers. Pruned accordingly, it can be used for low hedges or along borders rarely of congesting types. Since it is so slow growing, it is good enough for lining paths or marking out smaller areas of a garden. Due to its dwarf nature and extremely slow growth, it fits nicely in pots and containers, ideal for urban or indoor use, or terraces/balconies. It likes to grow in a warm and light area, so usually indoors for homes, greenhouses, or offices is where it can be used. Trimming is easily effective on the plant, it can be trained to take almost any form, as from the conventional pruned shrub in your formal garden or the Bonsai plant. This plant is best suited for, a partially shaded area but can tolerate full sun. In an indoor situation, it should be put where it will receive some sun in cooler temperatures while in an outside landscape situation, it should be placed in a site that has some shade during several hours of the day so as not to scorch the foliage. It is a plant that needs moisture, but it should not be planted in an area of water logging. In an attempt to add only moisture to your soil and not water it thoroughly, consider doing the following during those dry periods. These dynamic flowering plants are suitable for growing alongside other small shrubs as well as other succulent plants. The plant location is unique with a strong formation for growing potted ornamental plants.

Cassia fistula

Golden shower tree

Family: Fabaceae

It is native to South Asia.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: It is a deciduous tree growing up to 20m with a more open, spreading crown. The outstanding features are the bright yellow flowers, borne on erect, or sub erect long raceme, at times up to 50 cm in length and often in late spring. The leaves are pinnate with an average of 4-8 ovate leaflets on either side, providing a luxuriant green supporting cast to the flowers. Large straight and smooth legumes, 60cm or over in length, each pod contains a large number of seeds. Large straight and smooth pod which darkens to black when full-ripe.

Soils, Salinity, and pH: It prefers good drainage soil while this plant can tolerate any number that the soil gives for it. Frequent irrigation is not required with the tree, once the tree is grown. it is difficult to let it wither hence suitable for growth in dry and scrappy areas.

Landscaping uses: Cassia fistula is a beautiful, deciduous tree, native to the Indian Subcontinent whose attractive features include bright yellow flowers and a gracefully slender stem. It feels exotic and decorative in a way that no other plant would bring when planted in a lawn. Cassia fistula is well suited to grow as an example tree, that is, where the primary purpose of planting is to develop a focal tree. The bright, yellow-colored flowers earned it this reputation and this bloom spectacularly during the specified period only. This tree is developed alongside streets or avenues in tropical and subtropical climate areas. It has an equal spread and beautiful flowers which makes a perfect underground tree or decorative tree to be planted on broad streets, driveways, and public parks. The tree produces masses of yellow flowers which create impact and can be a focal point in large garden and lawns. It can be planted near patios or terraces since its flowers look beautiful when fully bloomed. This tree forms a source of food for bees, butterflies, and birds making it ideal to cultivate in wildlife gardens. It increases the biodiversity and also benefits pollinators throughout the area. In certain conditions, particularly when cultivated in clusters, the plant comes up with a beautiful golden covering all through the flowering period. This is especially done in expansive areas including parks, or botanical gardens. This plant is perennial, heat-tolerant, and drought-tolerant. These plants prefer full sun; at least 6 consecutive hours of direct sunlight are ideal for the growth and flowers. Although Cassia fistula tolerates drought once established, when young, the plants do best with frequent watering. It is a deciduous plant that, therefore, drops its leaves during winter or any other dry season.

Cassia artemisioides

Silver senna

Family: Fabaceae

Native to Australia.

Location in Kuwait: Wafra Farms



Characteristics: The plant Is an evergreen small to medium-sized shrub with an average height of 2.5 meters. This fern has a compact, rounded, 'bushy' form with beautiful narrow 'feathery' fronds. They are pinnately compound and emerge with a silvery grey or blue/green color, thus the plant has a soft feel to it. Floral heads are bright yellow and form a cluster of pea-like flowers which bloom in late winter or early spring. The flowers are large and open; they contrast sharply against the silver foliage of the plant. After the flowers have faded it bears tiny brown pod-like structures containing several seeds.

Soils, Salinity, and pH: The plant is best suited to regions that are well-drained, and grow in sandy, loamy, and rocky soils. To add on this, it is very resistant to drought conditions, though once set, it needs very little or no watering at all, making it appropriate for dry and semiarid zones.

Landscaping uses: This species have silvery-green feathery foliage and bright yellow flowers and hence produces a massive effect. These creations spread gradually, making them useful in the demarcation of gardens or yards, pathways, or driveways. Due to its drought resistance and ability to grow well in sandy soils, it does well in locations such as rock gardens or xeriscaping. The flowers will attract butterflies and other pollinators making it a better place to improve your biodiversity in your landscape. Because of that, the plant has a wide root spread which assists in preventing soil erosion, especially on the slopes. But once established, it only needs a small amount of water, making it an ideal plant for use in the desert. It can create some amount of wind break for other, more sensitive, plants. It can become invasive due to its ability to self-sow exceptionally well so its size when mature and how it spreads should be taken into consideration. In a nutshell, Cassia artemisioides is an opportune and ornamental shrub well-suited to enhance the aesthetic value of numerous landscaping uses in particularly dry climates.

Cassia glauca

Cassia or Gray senna

Family: Fabaceae

Native to Southeast Asia.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: Typically grown as small to medium tree or large shrub and can grow up to 7m in height. It also has a rounded or spreading crown with a fairly heavy branch more or less whorled. The leaves are pinnate and grey-green which give the plant its name; the lateral leaflets are oval to elliptical giving the plant a delicate and feathery appearance. The tree has cymes of yellow, conspicuous flowers that begin to bloom mostly in spring and summer but may continue blooming provided the climate is favorable. It bears flowers after which it develops cylindrical or cylindrical pods in which are several seeds. It bears fruit within pods that turn brown with maturity and stay on the tree for quite some time.

Soils, Salinity, and pH: Cassia glauca grows preferably in well-drained soil though it tolerates slightly water-logged soil and saline land which makes it grow mostly along the coast. Little watering was required once it had been established and it is well suited to arid regions of the country.

Landscaping uses: Cassia glauca should be planted as masses for a dramatic display. The silvery-blue foliage offers interesting textural contrast against other plants. Because this is a spreading plant, it really should be used to demarcate boundaries around gardens, walkways, or drives. For its drought tolerance and growth on sandy soil, the plant is ideal for rock gardens and xeriscapes. Cassia glauca can be container-grown, lending an air of elegance to patios, balconies, or courtyards. It would be perfect in a coastal garden for salty conditions and thus is good for areas with salt spray. The silvery foliage and bright yellow flowers complement well with warm, earthy tones that characterize the usual Mediterranean-inspired landscape. This plant is a good addition to the native plant garden because it can provide habitat for the local wildlife. These bright yellow flowers attract butterflies, bees, and other pollinators, thereby adding more value to this plant in gardens that support pollinators. Its wide-reaching root system helps in the stabilization of slopes, thus preventing erosion of the soil. It is highly drought-tolerant and requires very little water once established. Cassia glauca can spread very aggressively; consider its mature size and potential for encroachment. It is like a full-sun location and will not always perform as well in the shade. This is a plant that does require regular pruning to maintain a desired size and shape.

Casuarina eqeusetifolia

Horsetail

Family: Casuarinaceae

Native to Austeralia, Southeast Asia and pacific Islands.

Location in Kuwait: Water Front Urban Demonstration Garden (UDG-) Salmiya (KISR)



Characteristics: Saying this it is not pine but receives this tag because it resembles pine trees in its formation. A versatile tree employed for landscaping and for planting in many parts of the world to restore forest cover it is an evergreen, swiftly growing tree reaching a height of 15 meters. It bears a thin, straight stem bearing a layer of fine, needle-like twigs, which makes up a 'horsetail' appearance. The tree is also monoecious; the male and female flowers are found on the same tree but different on the branch. The flower is very small and rarely noticeable; male flowers grow at the extremities of branch lets while the female flowers are obtained from small woody cobs. Fruits are small, woody cones consisting of winged seeds and is on easy wind since it helps in the tree spread.

Soils, Salinity, and pH: can grow well in many types of soil but it best thrives on well-drained acidic sandy soils. It is Well adapted to conditions where, the soils are often impoverished, saline, or alkaline, this tree does not perform well in waterlogged soils.

Landscaping uses: Because of its occupancy space and attitude to grow in an erect position, it is mildly useful in acting as a barrier from strong winds that affect crops or building structures. Due to its many roots, it thrives well on slopes that need stabilization against soil erosion in the re-afforestation of areas. It may not be as dense as some of the other shade trees, but it can be used for some form of shade in large landscapes. It also withstands salt deposition and arid conditions This makes it ideal for planting at the coastal region. Due to its high rate of growth and ability to adapt to poor growing conditions, this species is commonly seen planted along the streets. It is adapted to the natural environments where it can freely grow high and rampantly cover the ground. It has a soft texture that contrast with plants that has wider leaves since it will look like it has thin feathers. It may be noteworthy, that one well-developed plant can act as the main decorative element of the landscape. It has limited rooting so it could be vulnerable to wind blow and inter-specific competition of root structures. In a nutshell, Casuarina equisetifolia is a wonderful tree, highly adaptive for every type of setting, and may well contribute tremendous and emphatic aesthetics to contemporary gardens.

Chamaerops humilis

Mediterranean fan palm or European fan palm

Family: Arecaceae

Native to Morocco, Western Mediterranean region, and Europe.

Location in Kuwait: Boulevard Park, Salmiya.





Characteristics: Tropical palm species that have been proven to withstand frost and are used in landscaping with an average height of 1 – 2 meters. It is the only palm that is indigenous to Europe. Even if it is small, it offers fan-shaped leaves and a clumping habit making it rather appealing.

Soil, Salinity, and pH: The plant is also moderately tolerant to wind and spray hence should be planted by the coast. They germinate well on well-drained soils of near neutral to slightly acidic though mildly alkaline pH

Landscaping Uses: Due to its climatic adaptation and preference for dry climates the plant is preferably suited for gardens in Mediterranean climates. It also preferably grows in conditions such as salt spray and rather sandy sites which are common in coastal areas. It is also suitable for container growing and contributes well to the tropical atmosphere of patios, balconies, or courtyards. It needs very little attention once it has grown, so it conveniently fits into the lifestyle of the owners of such homes. They can also be used to create a natural barrier because when planted together they will form a screen. Since it tends to clump it grows best in landscapes settings, and more commonly in gardens that are low maintenance. Due to its low water requirement and poor soil requirement, it is well suited to be planted in rock gardens. The structure and color of the plant also suit the warm earthen hue common to Mediterranean climate landscape designs. An individual, fully sized plant can be quite dramatic in a landscape architectural design. The species complements well with other plants that require little water, including succulents, lavender, and rosemary. They are relatively disease free so choosing a variety that is resistant to your climate should not be hard. This plant needs a sunny location to partial shade.

Citrus limon

Limon

Family: Rutaceae

Native to Asia, but it has been cultivated worldwide in warm area, and subtropical regions

Location in Kuwait: Wafra Farms



Characteristics: Lemon trees are considered as an evergreen plant it grows to 2.5 to 6ft depending on the species of the lemon tree planted and its environment. Leaves are dark green, oval, and have slight freelance. It is composed of small white flowers which are pink-tinged at the base, this is arranged in rounded clusters at the end mostly branches. The flowers are scarce, white with some freelance and the leaves are dark green, shiny, oval-shaped. It bears small, white flowers that are often suffused with purple, and the tree blossoms in a rather pleasant manner. These flowers are very spectacular to many pollinators such as bees.

Soils, Salinity, and pH: Citrus limon needs well-drained soils which are rich in organic matter. It is found in a mildly acidic to slightly alkaline or loamy and clayey soil. It grows in all recommended types of soils – light, medium, and heavy – but not in waterlogged soils or sands.

Landscaping Uses: Some of the most common landscape plants that can bear food are lemons trees. It may be sweet and citrusy with a hint of lemon, and it is perfect for giving that pleasant aroma to your garden. Dwarf lemon varieties are particularly suitable for container gardening so they can be placed on patios, balconies, or a small backyard. Lemon trees are tailored to Mediterranean-styled gardens; they give the look warmth and a splash of color. Lemon trees grow best where they get at least 6 hours of direct sunlight each day. Grouping of lemon trees is an aesthetic way of planting, besides the fruit, it has a raw fragrance of lemon. The aerial system and the rough outer surface of the lemon trees give architectural value to the structure. This is important since they ensure the right shape and size of the tree to develop as well as call for fruit production. Lemons grow well when fertilized now and then especially when the tree is growing. Lemon trees are a beautiful plant that can bring not only beauty but also its scent and taste as lemon fruit. If maintained properly they grow for many years allowing having fresh lemons and adding a little Mediterranean feel to your patio.

Citrus sinensis

Sweet Orange

Family: Rutaceae.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: It is an evergreen tree that attains a height of 6 m on average. Leaves are simple, smooth margins, oblong-ovate, and dark green with a glaze. Crushed or broken, they emit a gentle citrus smell and are aromatic. It has creamy white flowers, which turn out to be very useful in attracting pollinators. The fruit is round to slightly oval, skin is bright orange.

Soils, Salinity, and pH: Citrus sinensis can be grown on well-drained Sandy loam soil that is rich in organic matter. Prefers growing in slightly acidic to neutral soils with a pH of 6 – 7. Though they will grow in any kind of soil, they are intolerant to heavy clay and poorly drained soils that may result in root rot and other diseases.

Landscaping Uses: Sweet orange trees are great because they offer also the opportunity to eat what you are growing. It is sweet and tasty with hints of orange making it a nice addition to your garden if planted during the springtime. Another method of practicing good horticultural anthropology is the planting of sweet orange trees in detection forming a baseline of a natural fence because they have the aesthetics and aroma to keep away intruders. Sweet orange trees are dwarfed, so the trees are suitable to grow in containers which makes them appropriate if you live in a city, apartment, or have a small yard. Sweet orange trees easily fit the appearance a Mediterranean-style garden and bring some warmth and liveliness into it. Sweet oranges are grown best under full sun that is they require a minimum of 6 hours of direct sunlight per day. These plants require loose soil and one that drains well to avoid the running of the roots. They are delightful elements of landscape design with high ornamental value and fruits with a pleasant smell and taste. If looked after they can last for many years giving you fruit and turning your outside area to that of a Mediterranean paradise.

Conocarpus lancifolius

Green buttonwood

Family: Combretaceae

Native to East Africa Somalia.

Location in Kuwait: Water Front, Kuwait.



Characteristics: This is a fast-growing evergreen tree to about 30 meters high on average. Growth habit is quite rounded and dense. Leaves are simple and narrowly lance-shaped, mainly bright green making the plant look lush. They are capable of forming such an arrangement that they interchange with each other on branches. Its flowers are small, often greenish or yellowish, and inconspicuous as it is found on the trees. This succeeds with small woody fruits, just like its flowers. Its introduction in the landscape of Kuwait occurred in the year 1988. Much use of this tree occurs in house gardens and along the streets of Kuwait.

Soils, Salinity, and pH: Conocarpus lancifolius is a tree resistant to different types of environmental stresses, including salinity up to 10,000 ppm. This species is also resistant to drought conditions and poor soil fertility. Due to the plant being quite resistant to pests, little attention from gardeners who would like to grow this plant will be required or necessary. Optimal conditions can include a moderate temperature, while the tree can develop well even at temperatures above 50oC.

Landscaping Uses: Landscaping Uses: The Buttonwood plant can be found along the coast where it grows well in sandy, salty soils that are splashed with salt water. It is also widely applied to for the fixation of dunes as well as the control of erosion. Due to its high salt tolerance, it is ideal for use around the beach, salt marsh, or anywhere where the salt content in the soil is high. Buttonwood, like many other shade trees, is not very dense and can therefore offer filtered shade in large landscapes. Due to its wide root system, it helps to check the landslides and soil slopes. Buttonwood grows naturally, without precise form, and for this reason, is best suited to the wilder and unkempt flower gardens. It is used to beautify water bodies such as ponds, lakes, or streams or planted at the water tillage. Buttonwood combines well with other salt tolerance plants and drought- tolerance plants such as seagrass, succulent, and other native wildflowers. As a single tree, Buttonwood can also be used as a strong central accent on the territory of a landscape. This plant has an underground root system which might cause havoc to buildings or even underground utilities, hence should be planted at a reasonable distance from such infrastructure. Buttonwood does not need a lot of care but could quite often be pruned to ensure that grows to the desired size and shape.

Cordia myxa

Assyrian plum or Indian cherry

Family: Boraginaceae

Native to Asia, and Middle East.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: A tree that has leaves that fall off during winter or fall and usually has a mean height of 6 meters. This tree has a spreading crown and a fairly compact crown of leaves and has a rather dense foliage. The leaves are large, wider opposite, and shiny green with a slightly rough surface. They are fixed in an interchanging manner on the branches. It develops small creamy white to pale yellow flowers in cymes. The fruit is a very small oval shrub about 1-2 cm in length which is a drupe. When it is immature it is green and when ripe it is yellowish-brown in color. This fruit has dry, white, gelatinous pulp covering a seed occupying the center part of the fruit. It is a slow-growth tree.

Soils, Salinity, and pH: The Cordia myxa tree is fairly tolerant and can grow in different types of soils most especially in saline soils. It is most successful in well-drained soils and on a slightly acid to alkaline reaction which is best suited to its growth and vigor.

Landscaping Uses: Even though Cordia myxa is not as tall as other shade trees, the species offers partial shade commonly used to offer shade in areas with very hot temperatures. It has beautiful, shapely leaves and distinctive bell-shaped flowers provided it makes an attractive ornamental tree. This plant performs well under urban conditions, and it grows moderately making it ideal for street planting. Although it will require regular maintenance, it grows so thick, and its branches are relatively stiff that it may be able to give some generalized wind break for more sensitive plants. It also has a beneficial root system, it may help fix some of the sloppy areas and prevent erosion. They are native plants that require warm temperatures to grow and are associated with tropical regions improving garden outlooks. It has a natural, spreading growth habit making it ideal for use in the so-called ‘cottages’ and free-form gardens. It may become quite large so it may be an invasive species – its mature size and if it can pose a threat to local plants. Due to its high tolerance to the conditions that prevail in urban environments, shade tolerance, and pleasing foliage features, it can be used in both the domestic and commercial landscapes.

Cupressus sempervirens

Italian cypress or Pencil Pine

Family: Cupressaceae

Native to the Eastern Mediterranean region.

Location in Kuwait: Wafra Farms



Characteristics: Usually up to 30m tall or more and has a strictly columnar shape. The leaves are small, almost scale-like, about 5mm long, and a dark green color, very close to the twigs. The foliage is thick, and the trees always seem to be fully leaved the entire year creating a greenish look at all times. They are thick, tough, greyish brown and have developed deep longitudinal ridges with age and making the tree strikingly beautiful. It bears small round cones about 2-3 cm in diameter from which it yields seeds. These cones mature in two years and are at first green and later in the year turn brown and woody.

Soils, Salinity, and pH: It is drought-tolerant and the Cupressus sempervirens grows well on different types of soils such as sandy, loamy end, and clay end of the soil spectrum. However, it grows best in well-drained soils and is known to do fairly well in slightly alkaline or calcareous soils. The tree prefers dry, rocky, and nutrient-poor lands and for this reason best fit in arid and semi-arid regions.

Landscaping Uses: Due to their height as well as the narrow shape, it gives the impression of a strong vertical line in the given environment. Smaller types also make it ideal for use where gardens, parks, and even streets need that extra eye-popping injection. Versatile in terms of design, yet its rounded shape and overall neo-classical appearance are particularly distinguished by their suitability to give the formal gardens a neat and chic look. Alone, Italian Cypress planted in parallel lines can give the appearance of a hedge and prevent both sight and sound from entering the property. A mature tree can be simple and can significantly enhance the physical appeal of a landscape as it makes the landscape look more majestic. This species prefers to grow in geometrical gardens and lawns because of its geometric-shaped leaves and unified air. When it comes to the use of Italian Cypress planting this tree in clusters is effective and dramatic, particularly when used as a background or an edging. The plant has a very strong root system and is thus destructive and one has to be very careful when planting it around structures and underground utilities. Although this plant is not very demanding, it might need trim once in a while to keep it the right shape and size for your garden. In general, it is an exquisite tree that will lend a formal aura and architectural form to almost any landscape design. This tree is thus appreciated due to its flexibility, hardness, and standing forms, it’s used in domestic and industrial areas.

Cycas revoluta

Sago palm

Family: Cycadaceae

Native to Southern Japan, Including the Rykyu islands.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: Its growth is relatively very slow with the maximum height being about 2m. The plant has a stout and thick trunk that is unpolished and covered with the old bases of leaves. The leaves are dark green, glossy, and pinnate with a maximum length of about 2m long stiff, arching with a lot of narrow linear feather-like leaflets. New leaves are formed in a rosette at the top of the trunk and are softer, more juvenile, lighter in color, and afterward harden and darken in color as they mature. It is a dioecious species, meaning the plants that are dispersed are either male or female. In those male cones, large, barrel-shaped cones arise while in those females, a cluster of mega sporophylls, an extreme leaf bears seed. Seeds when created are quite large, oval, and orange-red.

Soils, Salinity and pH: The Cycas revoluta prefers sandy or loamy soils, which are well-drained. It does best when the pH ranges from slightly acidic to neutral. In the case of root rot due to heavy clay filled with water, it should also be well drained in the soil.

Landscaping Uses: Cycas revoluta or Sago Palm is widely used in landscaping because of its distinctive appearance and versatility. Often used as a striking centerpiece in gardens or landscapes. Provides an exotic, tropical look to any garden design. Well-suited for large containers on patios or entrances. Commonly used to add texture and structure to garden beds. Drought tolerant nature hence suitable for water-wise landscapes. They can be grown indoors in bright, indirect light. Full sun to partial shade. Soil should be well draining with a pH of slightly acid. Provide ample space for these plants to grow as they can spread out 3-4 feet in width. Plant alone or in conjunction with other species of tropical or subtropical origin. Often planted in pairs to flank entranceways, garden features, etc. Works well near pools, rock gardens, or architectural elements.

Delonix regia

Royal Poinciana or Flame tree

Family: Fabaceae

Native to Madagascar region.

Location in Kuwait: Al Shaheed Park, Kuwait city.



Characteristics: Delonix regia grows to medium or large size 10 to 15 meters in height. It has a wide, umbrella-like top that can stretch as high as the width of the tree to give cool shade. The leaves with their two sets of smaller leaflets create a gentle, mist-like appearance in their bright green color. This one is a well-known tree for its bright red-orange color which it displays late in the spring or the beginning of the summer, as it blooms in clusters. Every flower comprising of five petals, four regular ones, with one large and with the rest smaller in size; is yellow and white striped on the outside. Its fruits are long, flat, and hard pods that can get to a maximum length of 60 cm. These pods begin as green, afterward, they become darker and dry out, that›s when they open and let the seeds fall out.

Soil, Salinity, and pH: The establishment of the plant does well in sandy or loamy soils that provide good drainage. It can survive in poor soils even though it can adapt, plus it can grow in alkaline or acid conditions. It seems to have less success in water-saturated soils and heavy clays.

Landscaping Uses: Delonix regia, commonly known as the royal poinciana or flamboyant tree, is renowned for its vibrant red-orange flowers and broad, umbrella-like canopy. Shade Tree: Its wide canopy provides excellent shade, making it ideal for large gardens and parks. The striking flowers and attractive foliage make it a standout ornamental tree. Often used to line streets and driveways, creating a dramatic and colorful avenue. Fits well in tropical-themed landscapes due to its lush appearance. Commonly planted in public parks and gardens for its aesthetic appeal and shade. Requires full sun for optimal growth and flowering. Needs regular watering, especially when young. Once established, it is moderately drought-tolerant. Requires ample space due to its wide-spreading branches. Ensure it is planted away from buildings and other trees. Low to moderate maintenance. Pruning may be necessary to maintain shape and remove dead branches. By considering these uses and preferences, Delonix regia can be a stunning addition to landscapes, providing both beauty and functionality.

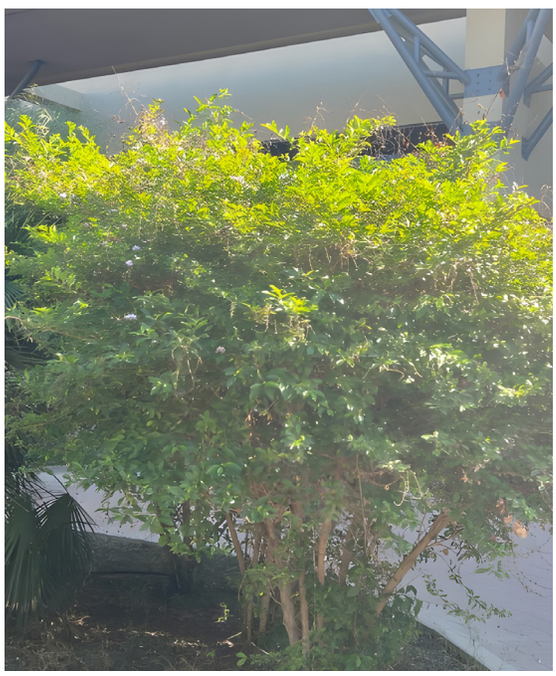
Duranta erecta repens

Gold edge or Sky flower

Family: Verbenaceae.

Native to Americas, from Mexico to South America.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: Duranta erecta repens usually grows as a small to medium-high shrub, typically 2 meters tall with the same spread, with a densely leafy appearance. Leaves un-toothed, oppositely arranged, are 1–3 cm long and almost as wide, shining bright green; however, the golden yellow color of these leaves appears somewhat lighter in some species. Tiny, tubular-shaped flowers, almost always blue and shades of lavender, develop from very early on right through the growing season. Some varieties even bear white flowers upon them. Small berries, yellow to orange in color, pendulous in clusters beneath the leaves. Clusters of berries range from yellow to orange, and while the berries can be attractive, they only persist on the plant in place of the flowers are blooming.

Soil Salinity and pH: Duranta erecta repens tolerates a wide variety of soils but prefers fertile, well-drained soil that is perfectly adjusted to the neutral number around 7 in the pH range for best results; it will also tolerate slightly acidic conditions.

Landscaping Uses; Duranta repens is widely used in landscaping for its purple leaves, small blue pendent flowers, and hardiness. The plant is well-suited to shaping and trimming, so it has many uses in various landscape designs. In addition, Duranta grows very quickly and extremely dense for use as hedge plants or the elimination of vertical walls. Screens or to protect themselves from being view and require to be trimmed now and then so that they appear tidy. It is a moderate to fast-growing species capable of being fashioned into ornamental shapes (from spheres and cones to animals in topiary) when pruning. It has showy blue or violet flowers, along with golden berries, decorating the species. Makes a nice companion in mixed borders or beds, adding color and texture to the garden. Container-growing is another added plus to allow it on patios and balconies where it can be moved into containers for easy ornamentation. It provides a good plant for wildlife as it draws pollinating bees and butterflies to its flowers, the fruit also attracts birds, so is well-suited to their gardens. I have a weak spot for plants with green, gold, or variegated leaves on dark plants. Seasonal interest of flowers and berries the yellow berries are bright when ripe following flowering.

Eucalyptus camaldulensis

River red gum

Family: Myrtaceae

Native to Australia

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: Evergreen tree of height up to 45 m, straight central leader, and open crown; therefore, this species would give maximum cover/shade. Its outer coat is greyish to white, and like other members of the willow family, its bark can be removed in long shingles to reveal a pale, new layer underneath. The leaves of this plant are simple, linear, lanceolate, and of a sickle-like form, they are as small or larger than those of the common nettle, and their color ranges from a dull green to a greyish hue. This plant has aromatic leaves that release a eucalyptus-like smell when crushed. The small creamy white flowers are produced in axillary panicles for most species and usually red or violet for others. Their flowers which open successively from the bottom to the top of an inflorescence contain rich nectar that draws several pollinators. The fruit is a small, woody capsule, a "gum nut" which contains a large number of very small seeds. The capsule is normally spherical or conical in form.

Soil, Salinity, and pH: Eucalyptus camaldulensis can grow in any type of soil, whether sandy, clayey, loamy, or heavy soil type. Although it can grow in a variety of soil types it generally prefers well-drained soils. This plant does well in any type of soil – from acidic to alkaline soil hence is very easy to cultivate.

Landscaping Uses: Eucalyptus camaldulensis is hence used mainly for planting as a shade tree because of its large size and broad crown. It provides extensive shade, in open areas, or even park areas and big gardens; that is why, in hot areas, this tree is preferred. It is quite fast-growing and attains a pretty good height, so they are mostly planted for shelter or wind breaking, especially for farming lands. The species are native to the riverbanks and flood plains, hence well adapted to the riparian planting. They commonly apply it in the rehabilitation project to support preventing wetland erosion apart from improving water quality. Of special value in wildlife gardens, this provides shelter and food for a variety of animal species. It has that fairly typical eucalyptus smell, which can be something desirable when planting trees in gardens. The leaves are cut to provide what is necessary and aromatic for functional and aesthetically beautiful landscapes. It grows to be a tall tree with smooth, pale bark that peels in large, clean slabs, hence making this plant an awesome larger decorative tree for things like parks, estates, and public regions with that remarkable dimension of appeal. Due to the huge size and coverage range, it is best suited to estates, parks, and the countryside. It grows in a very natural, country, or xeriscape landscape where one wants to have a wilder, free-form appearance. The plant is well adapted to planting with other natives or low-water-using plants. The gray peeling outer surface makes the tree attractive year-round, and the white, creamy flowers of spring and summer give the tree added appeal.

Ficus benjamia

Weeping fig

Family: Moraceae

Native to Southeast Asia and Australia.

Location in Kuwait: Al Shaheed Park, Kuwait city.



Characteristics: It is a rather flexible and gorgeous-seeking plant, which lots of people enjoy for its layout. It can be used in large gardens and yards in warm climates or inside the home in a pot throughout the year and brings the beauty of nature with it. When appropriately cared for, the Weeping Fig can live for decades and be of use in any situation whether for its looks or its purifying work.

Soils, Salinity, and pH: Ficus benjamina grows well in draining, fertile soil with slightly acidic to neutral pH. It can prefer and grow well in different types of soil. Nevertheless, such a plant prefers the nutrient-contained ground but can sustain in the poor condition of the ground.

Landscaping Uses; As a result of its elegant form, and interesting foliage, Ficus benjamina also known as the Weeping Fig is often used in landscapes. It is widely preferred for both indoor and outdoor arrangements because it is valued for the ability to 'green' the environment. In the gardens, Ficus benjamina can be grown to form thick and layered hedge or privacy barriers. This plant is evergreen and very dense thus can be trimmed to give it a formal hedge or left for a more informal look. When coppiced and allowed to stand individually, it develops an attractive weeping habit of branches with dark green dense foliage. Its weeping growth habit gives it beauty in gardens, parks, and other open spaces. This plant does well when pruned; it is suitable for topiary. Small, broad, and easily formed with flexible branches, it is used in the sculpture of beautiful bonsai art, which is a miniature tree. The plant is a very popular indoor tree, which serves as an interior setting to put in offices, shopping malls, and homes. Another advantage is its usability for container growing and appreciable for its performance in lower light conditions criticizing indoor horticulture. The plant is versatile due to its size, and it adapts nicely to large pots which can be placed in patios, terraces, or courtyards. It is easier to manage its size especially where the plant is used in some restricted area such as in container planting. It is best known for its simple shape as well as one that goes well in hedges topiary; it requires constant trimming. Outdoors it may drop leaves due to changes in weather conditions, but indoors it may drop leaves due to changes in light or temperature. The plant has a strong root system; it has to be placed away from the structures in the landscape to avert root decay on buildings, pipes amongst other structures.

Ficus religiosa

Bo-Tree

Family: Moraceae

Native to India and Indo-China.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: Ficus religiosa is a big tree that loses its leaves and has a crown shaped like a heart. The leaves are usually measured between 10-17 centimeters long and 8- 12 centimeters broad. Lots of the time, the tree gets additional roots that originate from the branches and spread into the ground, aerial roots. It has some cultural, and religious importance, people visit those places where this plant is worshipped as a pilgrim or tourists.

Soils, Salinity, and pH: Ficus religiosa grows best in drained soils because waterlogged soils are likely to cause damage to the roots. It is suited to loamy water retentive but well-drained soils. But still, it can also be grown in sandy soil although may demand more water than dirt. It is established that it is basically grows well under a neutral to slightly acidic condition with a pH of between 6.0 and 7.5.

Landscaping Uses: Ficus religiosa grows up into a large tree with a broad canopy; thus, it is an excellent shade tree in large gardens, parks, and public spaces. It is often planted at temples, monasteries, and religious compounds for the regard with which it was held within Buddhism, Hinduism, and various other faiths. It is considered a very special tree in Buddhist landscapes because it is under this tree that Buddha gained enlightenment. It is used in roadside planting in congested areas where there is enough space to form green corridors to give shade and help clean the air. Ficus religiosa is also planted in urban areas because of its air-purifying capacity and high tolerance to urban conditions, though there are precautions against its large size and invasive roots in small areas. It is often planted as a specimen tree, hence giving it the potential to be a focal point in the landscape. The heart-shaped leaf and broad canopy form an imposing visual feature. Many times, it is associated with tranquility and spiritual enlightenment; hence, it is used for meditation gardens or quiet zones where one can sit and reflect. Others include designs where the base of the tree is wrapped with climbing plants, small shrines are built, and even seats to make it also spiritual and pleasant.

Hibiscus tiliaceus

Sea hibiscus, Beach hibiscus, Coast cottonwood

Family: Malvaceae

Native to coastal regions of the Pacific and Indian Oceans.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: It grows mostly in the tropics and subtopics, both for the flowers and for the foliage it provides. It is a small to medium size, evergreen tree or large shrub that can reach a height of between 8 – 10 meters high. It has a spreading crown and becomes twisted at the trunk. Leaves are big and broad, broadly heart-shaped with a slightly leathery feel. These are found to be about 10-20cm in length and the adaxial surface is dark green while the abaxial is lighter colored. The margins of the superior pair of leaves are entire, and the leaves are always opposite to each other but alternate with the branches. The flowers are large and conspicuous which is about 8 to 12 cm in diameter. They appear to be yellow but have an inner red or maroon color. Flowers open in the morning and resemble small golden-yellow blooms before turning orange, and reddish in the evening just before withering. The fruit is a small, brown, woody capsule that splits open to release seeds. Locally, the seeds float and thus can spread by water, thereby helping the plant spread to other new coastal regions.

Soils, Salinity, and pH: They prefer growing areas with well-drained sandy soils that are characteristics of coastal regions but can be grown in loamy and clay soils. It does well in slightly acidic to neutral pH of the soil. The plant is versatile and performs well in regions with bad humus content, salinity which is frequently experienced near the coastal regions is well tolerated.

Landscape Uses: The Hibiscus tiliaceus or the ‘beach hibiscus or ‘coastal hibiscus’ is an upright-headed tree. An extremely beneficial tree that goes well when used in planting activities and is used for both aesthetic and usability purposes. Due to one of its unique uses in growing areas of saline soils, it is applied mostly in inshore regions because apart from aiding in fighting the further loss of coastlines it also assists in anchoring the ground firmly. They mostly grow in the dense and spreading form of crown that makes them a very preferable tree to plant in the park and other places that serve the public. That is why it offers sufficient shade and usually grows in an area commonly regarded as having a cool shade. If well pruned, the plant can act as a hedge or a wind break when the plant is grown at intervals. They specifically: |It is used as a hedge or shelter belt since it conceals from the strong breeze or winds originating from the sea. Its flowers are also bright yellow colored with a red disc at the center and have been often employed for cultivating ornamental gardens. Moreover, in some garden designs, it was compliant to plant the plant in large pots where size and shape is all the more easily contained. Nonetheless, Hibiscus tiliaceus has no problem blending into the framework of landscaping associated with the tropics and the coasts. It is a plant that is low maintenance in most cases and that can still be grown in xeriscapes where little water and foliage care will be applied. It blooms to attract bees, butterflies, and birds; therefore, it can be planted in the wildlife garden. Instead, this gives a chance for biodiversity to happen by supporting their homes and food for so many pollinators.

Leucaena leucocephala

lead tree or white lead tree

Family: Fabaceae

Native to central America and Mexico.

Location in Kuwait: Al Shaheed Park, Kuwait city.



Characteristics: It can be up to 20 meters high; it was even advertised as one of the fastest-growing trees in the world. The leaves are bipinnate, with small portions of the leaves, which the tree a soft and feathery look. It is small, spherical flowers, which are white, or cream are congested in large numbers. It bears a long, thin pod bearing several seeds. These pods turn brown when they ripen and are known to be produced in big numbers.

Soils, Salinity, and pH: The plant is moderately drought resistant but very much a water-driven species and thus could be exerting some pressure on water use, particularly in regions of the country where water is scarce most especially in the more arid areas. Endures some alkaline soils with some level of salinity.

Landscaping Uses: Leucaena leucocephala or called lead tree is one of the multipurpose species commonly used in landscaping because it has special features and functions. It has very many uses in the recreational area owing to the dense nature of the plant, it is used in providing shelter, especially to farms from strong winds. It has a widespread root system that assists in the fixing of soil, especially an area that experiences soil erosion, such as a steep slope or along a water body's edges. It has lovely green foliage and white-puffy flowers, giving it an attractive appearance and thus grown in gardens and parks. Because of its rapid growth and close spacing of the branches, it is often used as a multilateral or living fence. Its coverage is somewhat median; thus, it can be used for developing a microclimate for small plants or designated sunny territories for work and recreation in gardens. Leucaena is a legume and has specialized root nodules that enable it to fix nitrogen from the atmosphere and as a result, improves the fertility of the soil and is used often to enhance agroforestry when creating landscapes. It is fast-growing and adaptable, which is ideal for the naturalistic or wild garden, where such plants that resemble natural environment are preferred. Because of this quality, it is commonly used in permaculture gardens because of its nitrogen-fixing properties and its impact on the soil used in the garden. More formally, Leucaena may be pruned and incorporated in rows of mixed shrubs and help achieve texture and focus that distinguishes the height and size of other ornamental plantings. However, it is especially pointed out that the plant in some areas can become a pest since it actively spreads and reproduces by seeds. Thus, it must be used appropriately to avoid further spread in vulnerable spaces.

Leucophyllum frutescens

Texas sage or purpule sage, Nikardia plant

Family: Scrophulariaceae

Native to southwestern United States and northern Mexico.

Location in Kuwait: Water Front, Kuwait.



Characteristics: It has diminutive, silver-gray to green leaves through which it can be differentiated from other species. The leaves are pubescent, with small closely lying hairs that have the function of minimizing transpiration by retaining a kind of moisture to form what is known as leaf gloves and acting as sun shields. Prickly pear shrub normally stands 3 to 5 feet above the ground but can be up to 8 feet in an ideal environment. It bears tubular flowers which may be pale purple, purple, pink, or white according to the specific species. These flowers are usually produced after rain and may bear flowers more than once within a year. It is easy to grow does not need to be pruned often and has in general very low care requirements. Nevertheless, they should prune after flowering, or at least in the early spring, to help bring about a desired form or more bushy growth habit.

Soils, Salinity, and pH: Leucophyllum frutescens likes well-drained soil and it can grow in sandy, rocky, and poor soils. It grows well in slightly alkaline to neutral soils pH of 6.0 – 7.5 but due to its ability to spread outside roots, it should ideally be planted in any well-drained soil. It also grows well in saline soils, a factor that might be important for streamside farming, or farming just a few kilometers away from an ocean.

Landscaping Uses: Most people have used it in landscaping; especially whenever the weather is dry all year round being extremely hot. This makes it suitable for xeriscaping as well as any garden that has been put on a water rationing regime. It is for this reason that, once a landscape has been established, it does very little require watering from other avenues. Ideally, this shrub should be positioned in cultivations that receive full sun exposure and will bloom even more to place in a sunny area. Moderate light is required, and it will tolerate just a little less but may not bloom as often as it would under normal conditions. It also grows a lot of thorns and has particularly good foliage It is often used for hedging or boundary plants. But it is not very green, and has a silver look most of the time making it look especially good in winter, and the flowers of other colors in the rest of the year. They feature bee, butterfly, and other pollinator-friendly flowers which makes them ideal for planting in a wildlife garden.

Ligustrum Japonicum

Wax leaf ligustrum

Family: Oleaceae

Native to Japan and Korea.

Location in Kuwait: KISR Main Campus, Shuwaikh.



Characteristics: Related to the honeysuckle family an evergreen shrub that can occasionally grow to 2m in height though it may occasionally grow to heights of 6m and this it has to be pruned. They are plants with close crowns, equal height and spread, that is a crown without leading or trailing shoots. Leaves are shining and intensely green, leaving a rather oval shape and up to 5 cm long. The plant is a perennial and flowers all year long, and this may seem a little strange to have a shiny look to the plant. It flourishes in an open often sunny to part-shaded environment. At low light, the shoot remains short and forms more of the plant than when grown in medium shade.

Soil, Salinity, and pH: Ligustrum Japonicum will do well on any average type of clay loam or sandy soil. Although the plant prefers well-drained soil, it can tolerate medium levels of water logging. This plant can grow in a wide pH range of soils starting from slightly acidic and up to slightly alkaline.

Landscaping Uses: It is used in landscapes for its handsome foliage, adaptability, and versatility in different garden settings. This is a very low-maintenance plant that can be pruned to hold shape and size. Performs shearing very well; hence, it is a popular choice in formal hedges and topiary. Left to take on an almost natural form, the Japanese Privet can be utilized as a very attractive specimen plant or small tree in the landscape. Because it is an evergreen, it also works well for foundation plantings around homes and other buildings that require regular pruning to keep them in shape. It may also be grown in large containers, providing structure and greenery to patios, decks, and entryways.

Moringa oleifera

Moringa

Family: Moringaceae

Native to Indian subcontinent

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: It grows to 10–12 m in height with an erect, small-stemmed tree and a spreading crown. Leaves are pinnate with small, oval, petiolate leaflets; they are juicy and bright green at a young stage while at the mature stage get dark. Such leaves are very much valued for their nutritional importance. This tree has attractive flowers, white to pale yellow which is arranged in rather loose racemes. They are in a size of 1-2 cm diameter they can have flowering done continually throughout the year depending on the climate condition. The fruit is a dry continued fleshy structure, (pod) that can extend up to a length of forty-five cm. Brown-colored seeds are also available inside the pod and every seed has three sections of paper-thin wings.

Soils, Salinity, and pH: Moringa oleifera species affect the tropical and subtropical regions, but they can grow almost anywhere, as long as the climate is a little less than a desert climate. They prefer a well-drained soil type which is sandy, or clay loam and they prefer a neutral to slightly acidic soil pH. The tree had to be sown in an area of full sunlight, though it had to be protected to some extent to thrive. It also grows fairly tender in the frost regions and may be pulled off during the worst of the freezing times.

Landscaping Uses: Moringa oleifera, locally referred to as the drumstick tree or the miracle tree, is a very useful tree when it comes to landscaping as it grows fast, can grow with little water, and has a host of benefits. It is a perennial plant full of feathery leaves and small white flowers, thus giving landscapes a fairly light presence. It is usually used in the planting of trees for beautification in gardens and parks to mention but a few. Moringa grows fast and offers average protection from the sun thus perfect and can be used where there is a need for shade such as planting beds, relaxation areas, or if used in children›s play areas. The tree is well recognized by its edible components, which are the leaves, pods, seeds, and flowers, to make it quite suitable for the landscaping of edible gardens under temperate climate conditions. The most common is usually in gardens, where both aesthetic and nutritious value are of major consideration. It also has value for soil nitrogen fixation, which makes it improve the quality of the soil in which it grows like all the other beans. It therefore makes it very effective in the permaculture system and sustainable garden production. The plant is xeric, that is, it is very tolerant of drought: it will be appropriate to use the plant in xeriscaping and other parts of the garden where water shortage is critical. In bigger designs of landscapes like farms or homesteads, it is used in agroforestry systems where it provides nutrients and shade for other crops. Its leaves and seed pods are also the fodder for animal species. Moringa is often considered together with edible landscaping designs. Because of its edible and medicinal uses for many of its parts, it is ideal for kitchen gardens in particular backyards that combine food and beauty. Owing to the growth, cycling of nutrients, and its ability to grow even in poor soils, the Moringa tree is suitable for permaculture regenerative landscapes, and gardening. It enhances the quality of soils and offers many ecosystem services at the same time.

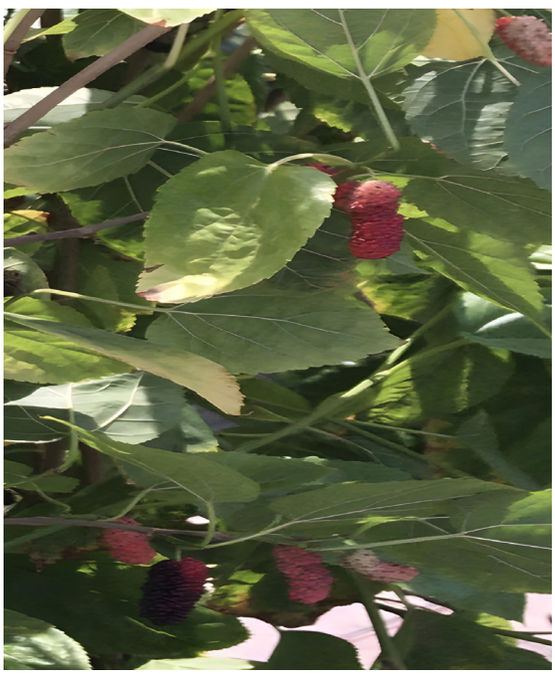
Morus alba

Mulberry tree

Family: Moraceae

Native to China

Location in Kuwait: Al Shaheed Park, Kuwait city.



Characteristics: Normally, can reach a height of 10-20 meters with a broad, round top. The bark is smooth and light brown when the tree is young but develops deep narrow cracks as the tree grows. The leaves are opposite but can be alternate as well, solitary and mostly self-lighted and lobed or pinnate. They are glistening, of a golden-green color on the face that looks upward and are rough underneath. Its flowers are small, small and greenish-yellow, rather inconspicuous, and produced in spring. These flowers are bisexual, or there are two kinds of flowers on the tree: male and female, or on two different trees. It is multiple fruits, masses of drupelets like blackberries, they contain white to pink pulp and maybe purple to black. The fruits are ripe and tasteful; therefore, birds and other repaying animals eat them.

Soils, Salinity, and pH: Favors sunlight and is moderately forgiving of soil type so loams, sand, and clay are fine as long as the soil is not waterlogged. After it has grown, it can withstand cold and drought conditions. It is considered a low-maintenance tree, but pruning can be used to reduce the size and contour of the tree.

Landscaping Uses: White mulberry trees are very large canopy and can thus be used as shade trees in yards and other open spaces. Its fast development assists in making shaded surfaces, comparatively rather soon. White mulberry is widely present as a plant cover to guard against erosion of slopes or embankments as it has a giant running root system. Often, it is the root structure that serves to bind the soil. The tree›s fruit is especially relished by birds and small animals. This attribute is widely used in the wildlife garden as it helps to support the biodiversity of that environment. It has a very exceptional capacity to adapt to a wide range of soil quality and still be able to exist in highly polluted areas such as on the sides of streets, parks, or even parking lots. In addition, white mulberry tends to be of high ornamental value due to its loopy leaves and the wide-spreading pattern of its branches in cottage or rural gardens. It is an ornamental and edible horticulture plant because it bears edible fruits. Thus, Morus alba can be integrated into edible landscaping. White mulberry can be pruned so that it fits perfectly in a topiary or is well suited for being trained into a particular form for more formal garden layouts. It is pruned by heading out to control its size and shape, and another of the more traditional methods of pruning used is called pollarding in which the upper branches are cut. Mulberry trees may also be planted to give cover and shade in pergolas or arbors due to their vine-like and sprawled structure.

Myrtus communis

Myrtle

Family: Mytaceae

Native to the Mediterranean region.

Location in Kuwait: Al Shaheed Park, Kuwait city.



Characteristics: It is an evergreen shrub. This plant is used widely because of its attractive-smelling leaves, flowers, and fruit. Myrtle started to be used in the decoration of gardens and also for medicinal purposes way back in history. Usually gets up to 2-3 meters in height and has a very dense, almost bushy crown with a rounded form. The leaves are small, shiny, and strongly colored green; the odor of the crushed leaves is good. They are mainly opposite, lanceolate, and measure from 2-5 cm in length. Flowers are small, white, or pale pink, up to 1-2 cm in diameter with numerous stamens so the flowers look like fluffy. These flowers are grown best in late spring to early summer. After the flowers, the plant yields small blue-black berries which are edible and have a sweet fragrant taste. These berries mature in summer to early fall. The plant is aromatic throughout and more so in the leaves and flowers.

Soils, Salinity, and pH: Myrtus communis germinates from alkaline soil if watered with fresh water and the land moderately wet, accepts coastal conditions.

Landscaping Uses: Due to the plant's general bushiness, the Common Myrtle no doubt can do well when planted in hedges for barriers and backgrounds or even along hedgerows. It may also be shaped into neatly defined high hedges or allowed to have that shabby wild look. It is simple to prune and might well have been developed for growing in specific shapes; consequently, it could be made into topiaries formal garden plants, or geometric garden designs. Common myrtle is a small tree or shrub that bears minute white or pink flowers with an agreeable aromatic odor. This is well if planted in sensory gardens or pathways where people will be moving; they will get the smell as they move past the plant. Regarding the flowering stage, it can be biologically pollinated naturally through bees and butterflies. It will also bear small, blue-black berries which could also be taken as food for birds; therefore, the plant is good for gardens with birds allowed in the compound. This also explains why myrtle thrives in either clay or sandy loams and can be used in the control of water erosion and growth on slopes. These small flowers and lovely green leaves make them suitable for the cottage garden style, where they will complement flowers such as roses and herbs. That's why it has been cultivated to develop formal hedges along flower borders, paths, or any edge in general.

Nerium oleander

Oleander or Rosebay

Family: Apocynaceae

Native to the Mediterranean region and Asia.

Location in Kuwait: Al Shaheed Park, Kuwait city.







Characteristics: This is a tender evergreen shrub with a bushy habit and procumbent to erect growth habit when fully grown; it averages 2 to 6 meters in both height and spread. These are pinnate, narrowly lanceolate with a size of between 5 to 21 cm, dark green, leathery in shape, and arranged oppositely or in whorls of three the stem. The large flowers vary in size about 2.5-5 cm in diameter and are white, pink to red, and yellow to peach-like colors. They are often developed in large numbers, either at the end of branch lets or several in one main axis of a branch. Flowering occurs between May and October, but it largely depends on the climate. Plants bear long thin seeds in the form of pods each pod has many seeds which are provided with silky hairs to be carried by wind.

Soils, Salinity, and pH: Part of this plant is propagated and can do well in full sun, poorly drained soils, or rocky ground; it is also very hardy, especially in hot and dry regions. It can grow in coastal areas where it tolerates salt spray and is often used in xeriscaping.

Landscaping Uses: Oleander is dense with foliage, and it grows fast; hence, it is ideal for screens, hedges, or windbreaks. It can be pruned for a formal look or left in its more natural shape for an informal screen. Its bright, showy flowers- ranging in color from white and pink to red and yellow- bring an attractive accent into mixed planting beds, borders, or a single focal point. The oleander plant grows along highways, road medians, and public parks due to its resilience to pollution, heat, and poor soil conditions. It follows, then, that it would do very well in harsh environments with very minimal maintenance required. An established oleander is exceptionally tolerant of drought, hence recommended for xeriscaping or dry-climate gardens. This plant also does well where there is a low supply of water because of its deep root structure. Because of this reason, Nerium oleander may be used on slopes to hold the soil in place against erosion. It gives a wide range of colors: from white and pale pink to deep red flowers, hence making it a flexible plant in designing color-themed gardens. It would have been great to stand on its own in simple monochromatic designs or be complementary to other flowering plants for color contrast. Nerium oleander does well with minimum care; thus, it can be used in a low-maintenance or no-fuss garden design with minimal watering and pruning.

Olea europea

Olive

Family: Oleaceae

Native to the Mediterranean region, Asia, and Africa.

Location in Kuwait: Boulevard Park, Salmiya.





Characteristics: They can reach a height of between 3 and 12 meters although the plants can be trimmed to a smaller size. It has a large, rounded top with a twisted trunk which is more expressive with increased age. Mature leaves are long and slender, lanceolate, shiny grey-green above while being silvery below. It occurs in opposite arrangement on the stem and ranges between 4-10 cm in length. From the middle of spring till mid-summer, Olea europaea has small, fragrant flowers which are in cymes. These flowers are succeeded by the fruit – the olive, whichever could be green when unripe or black or dark purple when ripe. Olives are small, oval fruits, that can be consumed directly or simply pressed to obtain oil. The fruit is a drupe, averaging in size between 1 and 2.5 cm in length, and contains a single stony seed. Olives can either be harvested when they are green or black depending on the variety that is being grown. Green olives are olives harvested before the ripening stage and black is olives harvested when it has ripened.

Soils, Salinity, and pH: The tree grows best in well-drained, slightly alkaline soils; however, it adapts to a variety of soil conditions: poor, and rocky. It enjoys well-drained soil and full sun exposure and needs to be planted in an area or garden that receives 6-8 hours of direct sunlight daily. They are not very thirsty and indeed prefer dry conditions when they become fully grown, but the fruit tends to be better yielded from the tree if watered regularly.

Landscaping Uses: The Olive tree is among the oldest cultivated trees in the world. An evergreen, conspecific tree famous because of the fruit, that generally goes by the name of an olive and is a key feature of the Mediterranean diet. It is also used for timber, having attractive silvery green foliage and a twisted, very old appearance trunk. One of the distinctive features of an olive tree is that these trees may live for many centuries. Olive trees are mainly cultivated in gardens and landscapes because of their ornamental merits. Colored in silver/gray due to elements in its foliage, with a curved trunk and overall toughness, this is the right tree for gardens in the Mediterranean climate, terrace gardens, and even bonsai. They can be grown as specimens for curiosity alone, in lines, or even in big containers. «Olive trees had plenty of cultural and religious significance throughout the ages in several cultures». The fruit, which is thought to be the oldest known, is a sign of peace, wisdom, and fertility apart from finding its place in religious books and mythology for thousands of years in folklore. It is a beautiful tree with an attractive look, historical and multi-purpose too. It can either be grown for its produce, the olive oil extracted from it or can simply be planted for an ornamental purpose; the olive tree is a delicacy that enjoys the spillage of seasons. It can adapt well to harsh conditions, and then it is gifted with a diverse and colored culture, which makes it popular to be planted and grown commercially in gardens and landscapes of the world.

Parkinsonia aculeata

Mexican Palo Verde, or Jerusalem Thorn

Family: Fabaceae

Native to Americas.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: The tree usually reaches a standard height of approximately between 6 and 9 meters with an open, branching crown. The tree has straight and long soft branches which sometimes droop to give the tree the much-deserved curve. The bark is also smooth and green so that during the dry season it can photosynthesize when it has no leaves. The leaves are bipinnate, that is the leaf blade is divided into two rows of narrow leaflets making the tree appear very light. The leaves are generally approximately 20 cm in length and offer a loose foliage cover. It bears small, sweet-scented yellow flowers on cymes. These flowers are approximately 2.5 cm in diameter and grow in late spring and early summer but can bloom any time of the year depending on received moisture. The fruit is a brownish slender pod that can be from 5 to 10 cm long, with several seeds. The pods take a long time on the tree before they finally drop off the tree.

Soils, Salinity, and pH: Most Parkinsonia aculeata habitats are hot and dry, and the plant tolerates extreme drought. It thrives best in well-drained soils but can grow in any type of soil, beach, loamy or clay, gravely or rocky soils. It can also deal with saline areas it can therefore be used in areas near the coast.

Landscaping Uses: Landscape is the preferred usage for this material because of its modularity and features, workability, durability, and most importantly adaption to arid environments. This tree is widely used for xeriscaping and desert landscaping because this tree is heat and drought-tolerant. This tree has a green blotched bark together with bright yellow flowers; therefore, some people can utilize the tree to improve the outlook of dry climate. It is also used in streets or use of public gardens because its light canopy makes them to have light shadow in that it does not form too close shadow. The flowers are most preferred by the bees and all other Pollinators on the other side the tree has tight branches and can comfortably accommodate birds.

Parkinsonia praecox

Palo Brea, or Sonoran Palo Verde

Family: Fabaceae

Native to arid and semi-arid regions of the United States and northwestern Mexico.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: It is a deciduous tree and performs as a beautiful tree species; the tree grows up to the height of 6-9 meters and has a widespread crown. It has a relative structure of an open growth habit, with ascending branches, which results in a circular compact Crown. The outer layer is smooth green and an additional layer aids in photosynthesis during winter since there are no leaves. This green bark enables it to adapt to dry conditions because it will not require many leaves. The leaves are small, kidney-shaped, bipinnate, and fine feathery with small individual leaflets. These fruits are usually green although they may ripen to yellow before dropping off in instances of drought or high temperatures. The tree blooms freely with small, yellow, pea-like flowers which appear in clusters. These flowers are sized at about 2.5cm across and mostly bloom during mid-spring up to early summer which lights up the area. It is a flat brown pod, up to 5-10 centimeters (2-4 inches) in length that holds the seeds. The pods can stay on the tree long after they have been shed and only fall to the ground thereafter.

Soils, Salinity, and pH: Drought-tolerant with a high ability to thrive in very harsh climatic conditions, Parkinsonia praecox is very well adapted to hot and dry climates. The tree does very well when mature on a soil pH of 8. This tree also requires low nutrient needs.

Landscaping Uses: Valued for xeriscaping-desert landscaping where water is scarce. Green bark and delicate foliage with a smattering of bright yellow flowers make it very attractive in gardens and public spaces. Usually planted as a specimen tree or in groups to provide shade and visual interest in dry landscapes. Flowers draw a lot of pollinators like bees and butterflies. The branches will probably shelter birds and small animals, too. And pruning of the tree will also help in maintaining the size and spread when there is limited space in urban and residential settings.

Phoenix dactylifera

Date palm

Family: Arecaeae

Native to the Middle East and North Africa.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: It generally grows very slowly for the first many decades and may live for more than 100 years, just like the Date Palm tree. In this plant, the tree is dioecious in which trees bear either male strobili or female flowers. The male tree contains stamen, and the female tree contains pistil. Normally reaches the size of 15–25 m in Max, having a single supple smooth single tree trunk may reach to girth of 60 cm. Thinly feathery arching leaves on the crown may reach up to 3-5 meters in length. The leaves are pinnate with many linear smaller leaflets absconding on a central axis or rachis. The trunk may be very rough, as it bears the remains of old leaf bases in a fibrous, brown material. The Date Palm fruits are small, oval, in clusters which are referred to as dates. Fruit matures in 3-5 months when the dates are 3-7 cm in length and range in color from yellow, through red, to the mature brown color when they are ready to eat. The flowers are small and inconspicuous, wind-pollinated, and borne in dense heads, though with commercial cultivation, selfing occurs by hand pollination. The main maintenance of this palm involves the removal of undesirable fronds or those that possess signs of disease and death, and checking the population pressure around the tree, as this factor influences productivity and health. Date palm reproduced either from off-shoots or suckers collected from mature trees. Seeding is relatively rare but may be used when new trees are to grow.

Soil, Salinity, and pH: The plant has an optimum growth preference in arid regions and full sun exposure of this plant is recommended. It thrives in mesic to dry and xeric habitats, though it can tolerate saline to 10000 ppm in soil. Although once established it can withstand some drought, evidence of the benefits of irrigation, particularly during fruit setting.

Landscaping Uses: Since the fruit and the palm tree are used for ornamental purposes the general value of the Date Palm is therefore multiplied by two. Because of its large and majestic look with its tropical looks the Date Palm is used a lot as an ornamental tree in warm climates. The plant is also applied in the aesthetic features of parks, gardens, and even the streets. Thus, the Date Palm had a sort of symbolic significance as well as economic significance to many a region. It has been grown for several thousand years in the Middle East & North Africa, a food and cash crop for many people who inhabit the region. The Date Palm makes several uses out of its trunk and fronds: equipage, pottery making, embossing, and weaving. The trunk is utilized sparingly in construction and furniture, whereas the fronds are applied in arts, and crafting and used in the production of mats and baskets. Three common kinds of palm dates, which one meets in Kuwait, include Birhi, khalas, and Samaran.

Plumeria alba

White frangipani

Family: Apocynaceae

Native to the Caribbean and Central America.

Location in Kuwait: Al Shaheed Park, Kuwait city.



Characteristics: It is a tropical deciduous tree and prefers to grow to about 4 – 6m in size though the size can easily reach up to 10m in better environments. It has an oval to rounded crown with a somewhat open habit and has thick, fleshy crotches. The leaves are large, elliptical to lanceolate, and 15-30 cm long. It is located in the cluster at the terminal and ordinal nodes of the branches and shining externally with glossy dark green leaves. It has large, scented flowers which form a cluster. It usually flowers white with a yellow or pink button-like center, but this may also differ in color. They are oval or round shaped with a diameter of 5-8 centimeters, the outer surface is waxy. The flowers are however very fragrant and most often used in the making of the leis and other ceremonies in the hot countries of the tropics. They are used for landscaping and decoration since they emanate a good smell and appearance. Flowering generally takes place from late Spring to early autumn but is most intensive during summer. The fruit is a loculicidal, green to brown, cylindrical capsule containing numerous seeds. It is not especially showy and is not usually selected for breeding even during cultivation.

Soil, Salinity, and pH: Raised soil with good drainage should be used to grow the plant. However, it will grow on most soil types and is equally at home on the sands and loams. It grows poor on very wet soils; the soil must be well drained. Full sun should be provided for the growth of the plant and speedy development of flowers. They enjoy a solar-boosted climatic condition where most of their environment is influenced by sunlight. Not as drought-resistant as it started but does quite well when being watered in areas that receive low rainfall as long as it is young.

Landscaping Uses: It has also been widely cultivated as an ornamental plant because it blossoms attractive and has a good fragrance smell. It can be used in landscaping, tropical, and subtropical gardens, parks, or other amenities. It is also utilized in the container planting of areas that fall within growing conditions for indoor or outdoor plants. The rest of the varieties include Plumeria rubra, which bears red flowers, but that variety requires special care while planting in Kuwait›s environment and ideally grows in a house garden with horticulture practices.

Pithecellobium dulce

Manila tamarind or Madras thorn

Family: Fabaceae

Native to Central and South America.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: It is a species of evergreen tree whose natural growth is up to 6 – 12 meters but may even develop to more when they are growing in the ideal condition of the environment. The tree has a wide crown; it has a very hard and roundish tree when it has fully grown. The trunk is scaling rusty brown much of the time. Color should also be considered but only if it is of a different color from that of the trunks. Circumferences are normally light grey with thickness varying within the range of 90 cm – 300 cm. Their color is not the same as the trunks' color. The circumferences are somewhat lighter and are of a greyish hue; the thickness of a circumference varies, the size of the leaves being pinnate with several small, oval, and shiny bright green and glossy ones. Leaves are linear and tubular and leaf length varies between 5-10 cm. It has small white to cream ball-like flower florets. The flowers are fragrant and attract bees and butterflies. The flowers participate mainly in the development during the spring and summer seasons. To about 15 cm long or more, it is a flattened, twisted pod.

Soils, Salinity, and pH: Pithecellobium dulce wild grows in the tropical and subtropical zones of the planets. Originally, the tree thrives in well-drained soils but can adapt well in other types of soil including sandy and clayey soils. It can only stand slightly questionable in the matter relating to drought and making salt where it is almost perfect for growth along the coastal line.

Landscaping Uses: It is a big tree that has a heavy crown, under which it is possible to stay and avoid the burning sun, so it is cultivated in parks gardens, and other places. Pithecellobium dulce has bipinnate and elegant branches, and little and sweet flowers, and is, therefore, considered to be ornamental. It too has a bright, spiraled seed head making the plant so interesting and unique to the genus. Due to their highly branched shrub, they can be used for the creation of borders from wind and as a barrier from intruders. It is preferable to an urban environment because it will adapt itself to various types of soils and it is less water-intensive compared to the first type of vegetation mentioned here; moreover, it also tolerates less amounts of air pollution. The pollinators for the tree are bees and butterflies and thus the tree could be used in ecological gardens to feed birds and small animals as they shield them. This tree may grow up to a full standard height of 10-15m and has very extensive crown spread, therefore when planted in residential layouts or parks for instance it may need some spacious area. It is a quite simple and even unassuming plant regarding the climatic conditions it requires; it will be fine for those individuals who do not have much time to devote to the care of green plants, which have appeared in the garden. Apart from being an effective ornamental plant in a landscape, it has growth efficiency ideal for producing horticulture or plantations.

Prosopis chilensis

Chilean mesquite or algarrobo

Family: Fabaceae

Native to South America, particularly to regions of Chile, Argentina, and Peru.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: It is very well adapted to grow in such environments as it is characterized by small feathery leaflets to consciously minimize the transpiration rate. The tree has numerous uses in agricultural development and landscaping, and most importantly can capture nitrogen from the atmosphere. These plants start from seedlings, reach up to maturity, and rise to the height of 6-12m, probably even higher depending upon the conditions. They come with a huge, umbrella-like form of crown that helps protect the plant from the effect of the sun, which might be vital for a plant located in areas of low rainfall. It develops small yellowish–green flowers which are succeeded by pods containing seeds.

Soils, Salinity, and pH: Prosopis chilensis is drought resistant because the plant can develop tap roots through which it can obtain water that other plants in arid areas cannot get because of the short rainfall periods in those areas. Ideally, this kind of plant can freely grow in different types of soil, the sand, the soil containing salts, and rock-like soil.

Landscaping Uses: Chilean mesquite is circumscribed as an ornamental, versatile, and drought-resistant tree in current landscapes especially in warm dry climates. Chilean mesquite is known as preferable because of its enormous crown which provides acceptable shade in most hot regions. This tree does well in parks and other open areas as well as in spacious compound residences or large well-fenced gardens. Due to contorted trunks and branches and dense crowns, the tree has an athletic, sculptural look suitable for xeriscaping or ‘desert’ or ‘desert style’. Another addition to the attractiveness of such areas and xerophytes is its fine, frond-like leaves. This is a very drought-activated plant making it ideal for xeriscaping and many water-sparing uses in gardening. One of its benefits is that it can lead to an ability to reduce the number of times plants are watered especially in dry parts of the globe. The Chilean mesquite is frequently planted on the sides of streets, highways, and other parts of built-up areas because it can tolerate polluted conditions of the growing sites, poor sites, and temporary water deficits. Chilean mesquite can be easily grown once it has been planted and doesn’t need much work to be done in maintaining it. It is a kind that prefers a very natural environment, and it does not require a lot of water and care, perfect for any area that is eco-friendly or any area that is not attended to often. It may need to be pruned once a year if its size becomes overwhelming or if the pod has dropped to the ground. Nitrogen-fixing fertilizes the soil, thereby enabling the other plant varieties to grow even in improved conditions. This is a good tree for construction sites or any area wherein there is a need to replant the forest. Chilean mesquite is well suited in places of high wind and dust because it establishes a dense root system that entrenches the soil particles and the canopy that reduces the windborne dust’s effect in the upper layer of soil.

Prosopis cineraria

Jand or Ghaf

Family: Fabaceae

Native to parts of the Middle East, South Asia, and the Arabian Peninsula.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: The tree typically grows to a height of 3-5 meters, but under favorable conditions, it can reach up to 10 meters. It has a wide, spreading canopy, providing extensive shade, which is particularly important in hot, arid climates. The tree›s leaves are bipinnate, with small leaflets that help minimize water loss through transpiration. The Ghaf produces small, yellow, fragrant flowers that bloom in clusters, followed by seed pods.

Soils, Salinity and pH: Prosopis cineraria is exceptionally drought-tolerant, thriving in some of the harshest environments on Earth. It can grow in a variety of soil types, including sandy, saline, and rocky soils. It is highly tolerant of extreme temperatures and can survive both intense heat and frost.

Landscaping Uses: Prosopis cineraria, commonly known as the Ghaf tree or Shami, is a highly valued tree in arid and semi-arid regions, particularly for its adaptability, ecological benefits, and cultural significance. It’s a staple in desert landscaping due to its drought resistance and minimal water requirements. Though it is a desert tree, it has an attractive form with its feathery, grey-green leaves and spreading crown, making it an appealing option for both traditional and modern desert landscapes. One of the most drought-tolerant species, this tree is perfect for xeriscaping, arid gardens, and landscaping projects that emphasize low water use. It is used to protect soil from erosion and wind damage. Its deep roots help stabilize sandy soils, making it useful for reforestation projects and restoring degraded landscapes. The Ghaf tree plays a significant role in enhancing soil fertility through nitrogen fixation. It also provides a habitat and food source for a variety of wildlife, including birds and small mammals. In many regions, especially in the Middle East and India, the Ghaf tree is considered sacred and symbolizes resilience and sustenance. This makes it a desirable tree for culturally inspired landscape designs. Its ability to withstand extreme heat and poor soils makes it a good candidate for urban landscaping, particularly in desert cities. It’s often used in streetscapes, public parks, and civic areas. Once established, it requires very little maintenance. It is highly drought-tolerant, needing little to no additional watering, making it an excellent choice for low-maintenance landscaping. Occasional pruning may be needed to maintain its shape.

Prosopis juliflora

Mesquite or algaroba - Safsaf

Family: Fabaceae

Native to Central and South America, particularly Mexico, Peru, and the Caribbean.

Location in Kuwait: Al Shaheed Park, Kuwait city.



Characteristics: This tree can be fast growing up to a height of 12 meters the environment determines how big the tree will grow. The foliage radiates out in the thorny branches which is more of a problem in some scenarios when keeping it in check. It has bipinnate leaves with small florets to reduce the transpiration rate of the plant. It produces yellowish-green flowers with a fragrance with the seeds enveloped by small narrow pods.

Soil, Salinity, and pH: Due to the adaptation of its growing in arid environment it is drought resistant and can thrive in areas of little or no rainfall. The tree grows very many branches and has a very strong root system that makes it acquire water in dry seasons.

Landscaping Uses: Since Prosopis juliflora has a deep root system, it is very efficient in the stabilization of soil, and preventing erosion, and thus preferred for arid and semi-arid areas. In hot climates, the big canopy provides the necessary shade, and hence its usefulness extends to parks, along highways, or open spaces. Its ability to thrive in poor soil conditions enables its use in rehabilitating degraded lands and deserts. Sometimes, the plant serves in greenbelts around urban or industrial areas to act as a barrier regarding the filtering effect on dust and improvement of air quality. Its xerophytic character allows it to be preferred for drought-tolerant landscaping (xeriscaping) in arid or semi-arid areas of a region where water conservation is paramount. Prosopis juliflora is more adapted to the natural look of a landscape, especially in a desert atmosphere.

Rosmarinus officinalis

Rosmary

Familly: Lamiaceae

Native to the Mediterranean region.

Location in Kuwait: Wafra Farms, Kuwait.



Characteristics: The plant is an aromatic, perennial tree-like shrub. Many countries cultivate this species for its edible, medicinal as well as ornamental qualities. An annual /perennial herbaceous plant forming a shrub that may grow up to 1-2 meters tall. It grows densely in the bush in upright stems and branches. The leaves of the rosemary plant have hairs at the apex and are of a glossy dark green on the upper surface and sub-sessile lower surface with silvery-like pubescent. Rosemary leaves are usually soft and smell herbs with a fairly woody and slightly pine flavor taste. Rosemary bears small tubular flowers pale blue to white, and it even produces a small amount of oil. These flowers grow usually in spring and summer, but rosemary can flower at any time if grown in a warm climate. Therefore, it can be utilized as a biological diversification source in gardens because the flowers are interesting to bees and other pollinators.

Soils, Salinity, and pH: Rosmarinus officinalis is a sun lover and will grow best in well-drained soil, which may be slightly acidic to alkaline. It is found in various soils, but it does not like heavy waterlogged soil. Rosemary is incompatible with boggy soils; one has to be very careful not to water it too often because this causes root rot.

Landscaping Uses: Rosmarinus officinalis is commonly referred to as Rosemary y and is used as an ornamental shrub due to its attractive appearance, aroma, and water requirements. Rosemary can be trained to grow as low screening hedges or rather low borders to give form to gardens. It is effective in Mediterranean and xeriscapes gardens because of its water-conserving nature. Some bears of creeping type of rosemary plant can be used in managing areas such as ground cover. They are most suitable to be applied in inclined grounds where matters such as soil slip can be a great concern. Fuchsia prefers pots, which makes it possible to place this plant on a patio or a balcony and in small gardens. Container-grown rosemary can be relocated indoors during winter as well. Based on its role in cooking, rosemary grows well in herb gardens and is not only practical but also ornamental. The extensive root system that Rosemary develops enables it to support the soil and it can therefore be used as material to control water runoff on slopes and other areas prone to erosion.

Ricinus communis

Castor bean

Family: Euphorbiaceae

Native to Africa and the Mediterranean Basin.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: It may be grown as an annual or a perennial which is a plus especially due to fluctuating climate conditions. Growing up to 3.0m high, it may occasionally reach 10m (33ft) if conditions are ideal for the specific variety. It has big palmate leaves which could reach 45 cm in diameter they are dark green and glossy. Some varieties have reddish or purple on the foliage. The flowers of the plant are small and hidden and are green or reddish. They are produced in compact, cylindrical, or elongated shaped structures known as inflorescences. The flowers mature into somewhat prickly heads that house the castor oil seeds. It has seeds that are processed smooth, mottled brown and gray and contain castor oil.

Soils, Salinity, and pH: Average to poor water requirements are characteristic of the plant after it has been established, it grows best in well-watered, well-drained soils. It does well in an area of full sun and though it can tolerate averaging soils they should be well-drained. It prefers a slightly acidic to neutral PH but is robust when it comes to soil type allowing growth in all types of soil.

Landscaping Uses: Ricinus communis is a very dramatic plant sometimes used in landscaping to add bold foliage and an architectural presence. Because of the size of the leaves, and because they can grow quite tall, castor bean is often used as a specific focal point in the landscape. It is capable of serving as a specimen planting in garden beds or along borders. Ricinus communis adds a thick, tropical feel to a landscape that one might describe as tropical. The large foliage contrasts greatly with other tropical companions, like banana trees, cannas, and elephant ears. Because of its rather invariable height to 3 meters or over when at its best plant is often used as a background performing the function of a lush backdrop for smaller flowering plants or shrubs. The flowers attract pollinators like bees, while they are thought to be toxic to humans and some bird species. The large, lobed leaves often take on a reddish or purplish tint and provide dramatic textural contrast when planted with finer or more delicate foliage. This deep reddish or purplish coloration combines very well in modern or contemporary garden designs or works with bold eclectic mixes. Tall, upright growth habit provides vertical interest and makes it an ideal plant for adding height to the flower bed, mixed border, or large garden area. When using these plants, balance the aesthetic value with its toxicity concerns by placing it in areas that are safe and considerate of the plant characteristics.

Salvadora persica

Miswak

Familly: Salvadoraceae

Native to the arid and semi-arid regions of Africa and the Arabian Peninsula.

Location in Kuwait: Water Front, Kuwait.





Characteristics: It is a small to medium shrub usually 3-6 m high but sometimes spreads to as much as 10 meters. The branches are numerous, and the tree has a spreading, bush form. Small simple leathery leaves, bluish green. They alternate along the branches. This shrub blooms tiny and inconspicuous flowers that are generally white in color or light yellow. Flowers are very closely followed by little fruit berries.

Soils, Salinity, and pH: Salvadora persica is a very drought-resistant plant. It grows well in arid or semi-arid regions of the world. This plant can actually thrive on remarkably little water, hence very suitable for hot and desert areas. It does well on well-drained soils and can grow upon a wide range of soil types, including sandy, loamy, and rocky soils.

Landscaping Uses: A xerophytic, though drought somewhat resistant, shrub tree of arid zones, it does best in raised garden beds for landscapes as a small to medium-sized shade tree, particularly in desert cities. It is a big shade-giving tree useful in areas where there is much sun, for it is beneficial to those living in hot areas. The general spreading habits of growth make the tree suitable for use in reclaiming lands that experience high erosion, especially in semiarid areas. This reduces soil moisture and thus works towards preventing the turn of such areas into deserts. This plant finds its application in arable and desert belts for wind protection, owing to its high canopy and good resistance to extreme weather conditions. It also safeguards the crops, gardens, and buildings from the vernalization effect of strong winds and sandstorms. This can also be an interesting display feature in a xeriscape garden that would give the natural rugged look to the dry climate scenery. Its geometrical structure of branching offers architectural value. It is so well-known for its many uses in folk medicine; one of its uses involves cleaning the teeth, or it acts like a natural toothbrush. It can be grown in a medicinal or ethnobotanical garden or gardens in appreciation of their uses. The fruit produced by this tree is berrylike, and fleshy, and is relished by birds and small mammals. It thus can be recommended as a plant for reinforcement habitat heterogeneity in desert environments. If planted closely, it forms an attractive screen or privacy hedge if planted in rows. It always appears full-grown, so it has proved to be a good screen in large gardens or areas of farmland.

Santalum album

Sandalwood

Family: Santalaceae.

Native to India, and tropical regions including Sri Lanka, Indonesia, and the Pacific Islands.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: Small to medium evergreen tree. Reaches a height of 9-12 m usually, but with very favorable conditions, it is possible to reach up to 15 m. A small, spreading tree with a dense but open canopy of dark green lance-shaped leaves alternately arranged.

Soil, Salinity, or pH: Santalum album likes light well-drained sandy to loamy soils of slightly acidic to neutral pH. Full sun is best; partial shade will be tolerated. The tree is best grown in tropical and subtropical climates that have no frost.

Landscaping Uses: Indian sandalwood is an aromatic tree with great economic importance grown in India and some Southeast Asian countries. Santalum album is grown ornamentally as a park, garden, and landscape tree because it has an appealing growth pattern and grows slowly. It can be a part of a tropical or subtropical style gardens' style and central attraction. The plant has religious and ritual importance in many civilizations, but it is mainly important in Hindu and Buddhist cults. It can be a feature of the religious or heritage gardens. Indian sandalwood is used in Indian traditional medicine hence it will be suitable to be planted in ethnobotanical or medical-related gardens. This property makes it culturally and educationally valuable in the usage of natural remedies in history. In luxury environments including resorts, spas, or estates, the plant receives great recognition for its aesthetic qualities, scent, and rarity. It brings sort of a touch of class and cultural aggregates to the setting. Being an important part of culture and religion, it can be placed in heritage areas, and rockeries designed for hosting gardens related to India or Southeast Asia. It should be sown in areas that are close to the temple, areas for meditation, or any other region that embraces demi-monde.

Tamarindus indica

Tamarind

Family: Fabaceae

Native to Africa.

Location in Kuwait: Water Front Urban Demonstration Garden (UDG-) Salmiya (KISR)



Characteristics: It is a large evergreen tree, usually 15-25 but could be up to 30 m tall; Tree with a broad, spreading canopy and dense rounded crown. The leaves are oppositely arranged along the branches. They are small and each leaf consists of several leaflets. Flowers are short, small 6 to cylindrical orange-red or yellowish more often fragrant flowers in axillary corymbose clusters. Fruit brown-skinned, pod-like legume 7 -15 cm long; the inner aspect of the shell contains a stick sweet-sour pulp where all those are edible parts what we call tamarin. Pulp can be used for cooking, flavoring, or value-adding to any other processed foods. Those seeds can be utilized either for germination or perhaps some other traditional procedure.

Soils, Salinity, and pH: Planting tamarind is a great choice for well-draining soils, especially loam and sandy types. pH: Slightly Acidic to Neutral Rice tolerates different types of soils. Grows well in full sun and tolerates most conditions found in tropical or subtropical climates.

Landscape Uses: Tamarindus indica commonly referred to as tamarind is a large, long-lived tree native to tropical Africa but has widely been cultivated in most tropical and subtropical regions of the world. Tamarindus indica is widely utilized for purposes of providing shade; this is due to the wide canopy it bears. This is because of the rich greenery, which offers excellent shade in big gardens, parks, streets, and public places, especially in hot climates. It carries handsome foliage composed of a lot of branches, hence cultivated as an ornamental tree in tropical and subtropical climates. The dark-ridged outer layer also creates a surface of benefit to garden structures. This tree is particularly valued for its non-timber product and fruit used in cooking. Fruits of this kind can be included in food forest or orchard gardening, or as a specimen in food-scaped landscaping, both as an ornament and a food-producing plant. Tamarindus indica is planted along the streets, avenues, and boulevards because of its neat form plus the shade it affords to the walks, motor cars, and people. The best use for it would be lining long roads or driveways to avoid having it cut into small pieces. Because it grows very big and has many branches, tamarind trees are common in places such as parks, plazas, and recreation areas. It allows picnickers to have relaxation, hence at times, it hosts outdoor activities. It still has, especially, an ornamental interest all year round for its fine fern-like foliage. The fruits are dark brown pods, which are more aesthetic on the plant when they are mature, though the leaves slightly drop yellow during the dry season.

Tecoma stans

Yellow bells

Family: Bignoniaceae

Native to United States, Mexico, Central America, and the Caribbean.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: Ever-blooming shrub, height 3-6m, reaching a maximum of 9m in ideal conditions, thus it develops several shoots from the base growing in all directions to make a dense, broad, rounded habit. The leaves are compound, having 5-9 leaflets; these are ovate to lance-shaped, dark green, glossy, and pointed at the tip. It bears big, trumpet-shaped yellow flowers, though the orange and red varieties also exist. Flowers are in clusters, tubular in shape, and fragrant. Flowering happens from late spring into fall depending on the climate. Fruit is a long slender capsule, containing many seeds. The capsule turns brown and dry, then opens up showing seeds.

Soils, Salinity, and pH: The Tecoma stans bear well-drained soils, accommodating a wide range of soils, including sandy, loamy, and rocky. It grows best in full sun but tolerates partial shade. In tropical and subtropical climates, it is tolerant of heat and drought. Drought-tolerant once established, good for arid areas.

Landscape Uses: It is primarily utilized for the very bright yellow trumpet-shaped flowers that occur, often quite profusely, throughout the growing season. Used ideally to add color and spice to the gardens and landscapes. The plant is a good avenue for hedging or even a border plant along walks, drives, and property boundaries because of its dense foliage growth habit that generally grows upright. It will tolerate being pruned to maintain a formal hedge or be left to grow in a more natural look. The flowers of Tecoma are quite showy and attract a great number of pollinators, especially hummingbirds, butterflies, and bees. This is a fantastic addition to any wildlife garden or pollinator-friendly landscape. It is drought-tolerant once established, thus decent xeriscaping or dry, low-water gardens. These plants do well in areas that have to conserve water, such as desert-southwestern and Mediterranean climates. It has become common in public spaces, parks, and urban landscapes as it can be quite tough, and beautiful, and rarely needs much maintenance. It provides dynamic seasonal interest and can be used in mass plantings for a dramatic effect. It is fairly low maintenance but benefits from an infrequent prune to shape it, control its size, and encourage denser foliage and more blooms. It can be pruned right after each blooming cycle to keep it in form or left to take on a more natural habit in informal gardens.

Thevetia peruviana

Yellow oleander

Family: Apocynaceae

Native to the tropical regions of the Americas, including parts of Central and South America.

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: Thevetia peruviana usually occurs as a shrub or small tree and normally attains up to 3-6 meters. It is around 9 meters in places that provide very good growth conditions for it. The plant has a tight, round canopy with the aspect of bushiness. The leaves are lance-shaped, smooth-looking, and dark green. They bear opposite or alternate along the arching branches. The flowers are funnel-shaped, large, and bright yellow, but various cultivars have also produced orange and creamy flowers. The flowers are fragrant and appear in clusters. Flowering will occur commonly throughout the year in tropical climates though this may be seasonal in other regions. Fruit This is a green, elongated capsule turning brown at maturity with a splitting to release hundreds of seeds. The seeds are brown, and the seed coat is hard.

Salinity and pH of Soils: Thevetia peruviana prefers well-draining soils but tolerates everything from sand to loams. Full sun, partial shade. Tropical and subtropical, heat, and drought tolerant once established. Relatively drought-tolerant this plant is.

Landscape Uses: Thevetia peruviana, commonly known as yellow oleander, lucky nut, or be-still tree, is a tropical and subtropical ornamental shrub or small tree. The plant is primarily used as an ornamental plant in gardens, parks, and landscapes due to its attractive, bright yellow flowers that bloom throughout much of the year. It adds a tropical or subtropical touch to the garden. It can be used as a hedge or screen because of its dense foliage and upright growth habit. With regular pruning, it forms an effective privacy barrier or garden border. Thevetia peruviana is highly drought-tolerant once established, making it ideal for xeriscaping, low-water landscapes, or regions with dry climates. It thrives in areas where water conservation is a priority. Although the plant is toxic to humans and animals, its flowers attract pollinators such as bees and butterflies, making it a good addition to pollinator-friendly landscapes. However, care should be taken to avoid areas where pets or small children might come into contact with it. The plant is salt-tolerant and can thrive in coastal gardens. It is also wind-resistant, making it suitable for exposed sites where other plants might struggle. Its natural growth form is upright and somewhat bushy, making it versatile for a range of landscaping purposes, from small trees to large shrubs.

Terminalia mantaly

Madagascar almond

Family: Combretaceae

Native to Madagascar

Location in Kuwait: Boulevard Park, Salmiya.



Characteristics: Height 8-12m, up to 15m if high Shade spreading dense compact or hemispherical form. Early fall to very early spring is best, but in more benign years some summer sowing can work too (Feb plantings are slower). Branches have alternate leaves. Yellow to white flowers in small spikes or racemes. Inconspicuous flowers with little ornament value compared to foliage. Capsule small dry woody opening by valves to release seeds. Seeds are brown and hard-coated.

Soil, Salinity, and pH: Tolerates a range of well-drained soils but also needs high levels of nutrients or may grow on nutrient-poor solid surfaces; tolerates sandy loam to rocky (dry) soil. If it stays much longer, water during extended drought to keep up with its vigorous growth.

Landscaping Uses: Terminalia mantaly also known as Madagascar almond or mantaly tree is a beautiful tall, fast-growing deciduous tree. Because of the broad and level branching pattern, it is employed extensively for planting in parks, gardens, and any public area. Naturally, its umbrella-like foliage crown offers much-needed shade and for this reason, species that are planned for areas with activities or seating are ideal. Because of the layered canopy, which is symmetrical, it is mainly planted along the streets, avenues, and boulevards. They afford shelter to people on foot and in automobiles while leaving the streetscape more formal and orderly. It is more ‘tree-like’, having wide-spreading horizontal branches and attractive green foliage; for these reasons, it is often used as a tropical specimen plant. Owing to its architectural shape, it is used as an element of attraction in contacting landscape designs. Due to its large size and low need for care, this tree can be planted in larger inaccessible areas such as parks, playgrounds, and botanical gardens. It is simply a comforting and organic source of shade that one could ever imagine. It requires enough room to expand as well as mature the broad shade. It should be sited far enough away from structures and large trees so that they are not shading and impinging on it which will otherwise inhibit proper growth. The plant grows well in polluted or stressed urban environments so is well adapted to conditions in cities. It can adapt well to the unfavorable conditions that are associated with urban environments including soil compaction, air pollution, and water scarcity.

Vitex agnus-castus

Chaste tree

Family: Lamiaceae

Native to the Mediterranean region and parts of Asia.

Location in Kuwait: Water Front Urban Demonstration Garden (UDG-) Salmiya (KISR)



Characteristics: The plant grows up to a height of between 3 - 5 meters but under the most favorable environmental conditions, it can attain a height of 7 meters. The tree has a rounded crown and has a conspicuously dense foliage. Leaves are palmately compound with 5-7 lobes; these are lance-shaped and release an aromatic odor when crushed. Lance-shaped, bright-colored, textured, intense, and alternately on the stems. Tubular small flowers, purplish, blue or white; flower riots in a terminal panicle; flowers fragrant. The fruits are small in size, drupe in type, dark purple to black, and average measure 1 cm in diameter. The number of seeds in fruits is known.

Soils, Salinity, and pH: Vitex agnus-castus prefers well-drained but will grow in a range of soil types including sand through to loams and rather heavy clay. It is also equally suited to high alkaline soils with an SPS of up to 8000 ppm. It prefers a position in full sun, although it will tolerate a dashboard amount of shade.

Landscaping Uses: Vitex agnus-castus is a small deciduous tree or large shrub known and loved for its aromatic foliage, violet/lavender small flower heads, and its ability to attract pollinators. Primarily grown as an ornamental tree or shrub in landscapes due to its outstanding, terminal, brightly colored spikes of blue, lavender, or purple flowers. The flowers develop in a more refined and sophisticated look in the gardens but, also offer color options through most of the spring to summer seasons. Flowers of the plant bring in bees, butterflies, and many a pollinator that you would prefer in your garden related to its population. It is especially common in wild-life gardens because it encourages a diverse population of wildlife. It is a long-lived perennial once established, for which it is well adapted to the xeric and low water-use landscape settings. This plant thrives well in hot and dry climate conditions, and mostly it›s used in Mediterranean gardens. If pruned into a tighter habit, it›s useful as a large shrub for informal hedge purposes or a screen. This tough plant provides year-round interest and has the added value of the ability to function as an ornamental screen in larger gardens. It is very cold hardy but best to protect from extreme cold since the plant often dies back to the ground in harsh winters, but it regrows in spring. It is like a warm, temperate, or Mediterranean climate. Provided with optimal conditions of cultivation, this tree may grow as high as 25m.

Washingtonia fillifera

California fan palm

Family: Arecaceae

Native to southwestern United States and northwestern Mexico.

Location in Kuwait: Water Front Urban Demonstration Garden (UDG-) Salmiya (KISR)



Characteristics: Found in large proportions; the palm is bulky measuring between 15 to 20 meters; however, under the best environmental conditions, it grows up to 24 meters. It has a single, straight main stem which is more often than not thick at the base while above the first bifurcation, the plant is smooth whereas below it the plant is rough and fibrous. The palm is a large plant with large strongly bifid leaves in the form of a fan. The leaves are green and vary from 0.5 to 2.5 meters in diameter. It bears small white to cream-colored flowers which grow in huge, drooping clusters. They are less assertive than the rest of the foliage. Fruits are small, round, and black or dark brown, globose, fleshy drupe. They do not stand out much, but the fruits are edible plants for birds and other animals.

Soils, Salinity, and pH: Washingtonia filifera is very suitable for well-drained soils, however, it tolerates a variety of types of soils, ranging from sand to loams. The plant is partly to fully sun-tolerant most of the time, and it easily grows in hot, dry regions. It also is well adapted for desert environments, being able to go long periods without water in the extreme. It is also resistant to high pH and salinity; the maximum amount of which this water can take is 8000 ppm.

Landscaping Uses: It is commonly employed for gardening purposes mostly for its enormous tropical appearance and exceptional leaves. It can be used as a highlight in landscape borders, in group arrangements, as well as to stand-alone street trees. This is especially desirable due to its great tall and its fan-like foliage making it an excellent choice when incorporating an accent of tropical or desert feel in a landscape or public gardens. This is a palm that affords a habitat and food source for many wild animals including birds and insects. Some bird species feed on the fruit while the fruits are used for nestling by other species since the area has a closed canopy. As a species endemic to its range, the palm enjoys cultural value with the native inhabitants, who use the floriferous materials coming out of the leaves to make baskets and other artifacts. This is one dramatic, resilient palm that is popular for its breathtaking outlook. It thus becomes common in ornamental landscaping because of its growth to a large height and the beauty of its foliage. If taken good care of, this palm is worthy of being planted in desert and tropical gardens as well as in other developed city gardens and parklands.

Washingtonia rubusta

Mexican fan palm

Family: Arecaceae

Native to the arid regions of northwestern Mexico.

Location in Kuwait: Al-Shaheed Park, Kuwait city.



Characteristics: Palm that can grow up to 15 – 25m or up to 30m if it's in perfect environment in terms of breadth of the stem, the palm is not very broad. Its stem is single and bear with a moderate thickish for a palm of its class. One of the world's largest palm with very broad palmately lobed leaflets. The leaves are foraging and are green in color or up to 2.5m in diameter. The flowers are small, white to cream colored and arranged in long slender, usually rather conspicuous, racemes. The fruit is a small black or dark brown ovoid drupe. The fruit is not particularly showy, although certain animals, especially birds, consume the fruit.

Soils, Salinity, and pH: Although Washingtonia robusta colonizes the well-drained substrate, it succeeds in every condition beginning with sand and up to the clay soils. Grows best in full sun, thrives in the hot, dry environment and so suits arid and semi-arid environments, perfect for desert and city environments. Mexican palm once established can tolerate very dry conditions and it needs very little water.

Landscaping Uses: This palm is appreciated for the thin type of the trunk and the large, fan shape of the leaves; often planted as an individual accent; planted in groups along the street in the city. It is a very tall plant and is used very commonly in the creation of tropical or desert-like gardens as it gives that much-needed height to the garden theme. It can serve as home to many species of birds and insects etc. Fruits can act as food for birds, or the canopies are likely to afford some sort of protection. For native people, the palm is ubiquitous within its range and is used for creating utensils to mere shelter from the sun. The palm may require occasional trimming to remove browned or damaged fronds or maybe trimmed just for presentation, as is common with some palms. It is bulky to handle large fronds, and their clearing might require a professional touch as handling could be a hazard. Washingtonia robusta is one of those graceful, stately palms growing tall slender trunks crowned with large handsome leaves. The tree prefers growing in arid to semi-arid environments; however, it has an attractive aesthetic appeal. If well maintained this will be a worthy investment in any garden, urban complex, or any area that people flock to as it seems to attract a lot of attention. For this reason, attention has to be paid to possible pest issues and invasive traits of different biological kinds.

Ziziphus spina-christi

Sider or Christ thorn

Family: Rhamnaceae

Native to the Middle East and parts of Africa, including arid and semi-arid regions.

Location in Kuwait: Water Front Urban Demonstration Garden (UDG) Salmiya (KISR)





Characteristics: It can shoot up to 4-8 meters and a maximum height of 10 meters during the optimum environmental factors. The shrub is more spreading than tree-like, has a bushy appearance especially when fully grown and has a spreading crown. Smaller than the previous species but sub spherical or sinuate; small opposite leaves, ovate or elliptical, shiny green, and thick. These are small measuring between 3 and 4mm, yellowish green in color, and are arranged in axillary racemes. Not very conspicuous which is why it does a lot for this plant in terms of looking it up in general. Fruits: Small, round drupes, 1 – 2 cm diameter, green until they are torn away from the tree, and can be reddish-brown or yellow. It also bears seeds that develop fleshy fruits for human consumption raw; they taste like dates.

Soils, Salinity, and pH: It is well-drained soil, however, is well suited to virtually all kinds of soils from sand to stony terrain. It grows best in areas that receive full sunlight, and it is drought and heat-resistant. This is a xerophytic plant with very little signs of receiving water if any at all throughout its existence. This tree tolerates pH 8.

Landscaping Uses: The preferred and most frequent utility of the Ziziphus spina-christi is for ornamental purposes and as a hedge plant due to the abundant foliage, and thick, and attractive fruits. They can be employed for hedgerows, in any desert garden, and can also help as all-natural barriers. This resistance to harsh conditions particularly to arid conditions makes it suitable for xeriscaping and arid landscaping. Fresh fruits are the ones which can be eaten raw and are taken fresh while in traditional foods some fruits can be taken when they are dried. Ziziphus spina-christi is a shelter and nutritive resource for avifauna and insects through sheltering and feeding. It shelters them and the one containing juicy substance is consumed by them. This root system grows to act as props and constructs of the soils of arid and semi-arid regions. The honey produced from this tree is particularly important to humans of this type. Other species have also been introduced to Kuwait including acclimatized species.

Overcoming Landscaping Challenges in Arid Areas



This section will address issues that have been posed by those interested in landscape and the environment which the understandings of are not very clear; these include, possibility of invasive species in Kuwait environment, factors to consider when choosing woody plant species for a particular region, standard procedures on planting trees along the roadsides and greenbelts, characteristics of windbreaks for agricultural land, what xeriscaping is, protection of gaseous pollutants emanating

Criteria for Selecting Woody Species for a Specific location

Careful selection also involves choosing the most suitable plant for a site, considering many factors that will ensure the plant maintains its environmental as well as aesthetic benefits without high risk of disease or structural impact. Things to be considered in the selection of plant species appropriate for a particular site includes: Tree species selected should normally be of those species, which are known to be adapted to the climatic conditions of the area-for example, drought-resistant trees for dry areas, and frost-resistant varieties for cold climates. Consider seasons of temperature extremes.

Some trees prefer rich, organic soils, whereas others can thrive with poor or sandy soils. The soil type like clay, sandy, fertile, or poor usually dictates which plant is to be used. Soil drainage again is another factor in the selection process since some species of trees need well-drained soils, while others are mostly adapted to wet or at times waterlogged conditions for a short period. Consider how big the tree will be at maturity. Some trees become much larger and require more space, whereas others are better for smaller areas. Large trees are not appropriate near structures or beneath the canopy such as Conocapus.

Get to know the water demand of the plant. Species of trees which require frequent watering for them to grow well may not be suitable for the area which has a low water supply. Plants that can withstand shortages of water or plants that require average amounts of water may be most suitable to the conditions. Some plants can be selected for certain roles, for instance, shade, ornamental, wind breakage, or for noise control. Concerning tree appearance, the shape, color, and size of leaves and flowers should also be selected depending on the visual impact desired. There are some varieties, with a kind of high resistance to pollution as well as the stress of urban areas so it is suitable for urban or industrial zones. Salt tolerance is also crucial in regions where high-salinity irrigation water as illustrated by Vitex is used. There are plants that support wildlife either by offering them an abode or by offering them the necessary resources. Selecting trees that offer fruits or home options such as Ziziphus encourages local airborne ecosystems.

Steps for plant selection. First is site evaluation of the area to be undergoing tree planting taking into account the prevailing planting conditions. Secondly, research on the existing trees that can suit the conditions of the site through locals or professionals. Lastly think about the future cost of the tree and cost which will be incurred time taken and energy used for constant maintenance. If resources are limited, perhaps low-maintenance trees will be good to use.

Roadside Planting and Greenbelts Guidelines

Depending on the quality of the road and its environment, roadsides are many times a great improvement. On-road planting is a complex solution to stabilizing road and environmental qualities for enhancement. The general principles of transport, landscape, and environmental structures shall be taken into consideration for different types of landscapes across the street. The planting shall follow with construction of pavement and there should be a comprehensive general plan. And yet, there is a

possibility of consistency and visual unity of planting but also the plants in conditions of the locality.

When people want to plant trees along streets and roads, then it becomes important that some guideline or standard is there so that such projects may be successful in terms of height symbolizing a strong environment augmented by the beauty. Issues like proper species choices, and appropriate species for the area concerning heat and water stresses are some of the matters of importance. The types of plants to be selected should be those that can bear the drought conditions and high salinity in water-scarce regions. The Site and spacing, good distances should be left between the trees to cater for the growth of the trees and also to avoid competition of root stalks. Space for instance allows drives for free air circulation thus minimizing the spread of diseases. Trees should be planted in places where they will not have any threat to developmental features like roads, walkways, or electrical lines. It should be made in a manner that does not produce a medium for problems in the future with these structures.



Figure 1. Afforestation under high-voltage electricity pylons

Environmental and aesthetic gains, out of which trees which tend to help in the absorption of pollutants that contaminate the air as additional advantages are commonly grated as effective dust trappers capable of slowing down the rate of run-off, in the reduction of which, plays an important role in the overall conclusion of the urban horticulturist.

When planning to install barriers of plants on the roads, then this comes in three forms. It has also differentiated between solid, perforated, and incomplete barriers. Organization of plant mass through the creation of the composed solid wall. Partially closed barrier with throughs characterized by gaps or spaces in the plant cover. For instance, greenbelt with openings, having plants of varying height, and with prescribed sylvan patterns. An incomplete barrier is that part that is partially blocked or where there are gaps within the plantings, or it does not create a hedge-like structure. For example, trees or shrubs in a scattered manner along a distance from each other or the distance of the road. There are several types of barriers, and the functions of the barriers differ depending on the specific type selected and can include the specific need for a visual screen, sound absorption, building aesthetics or tap dust.

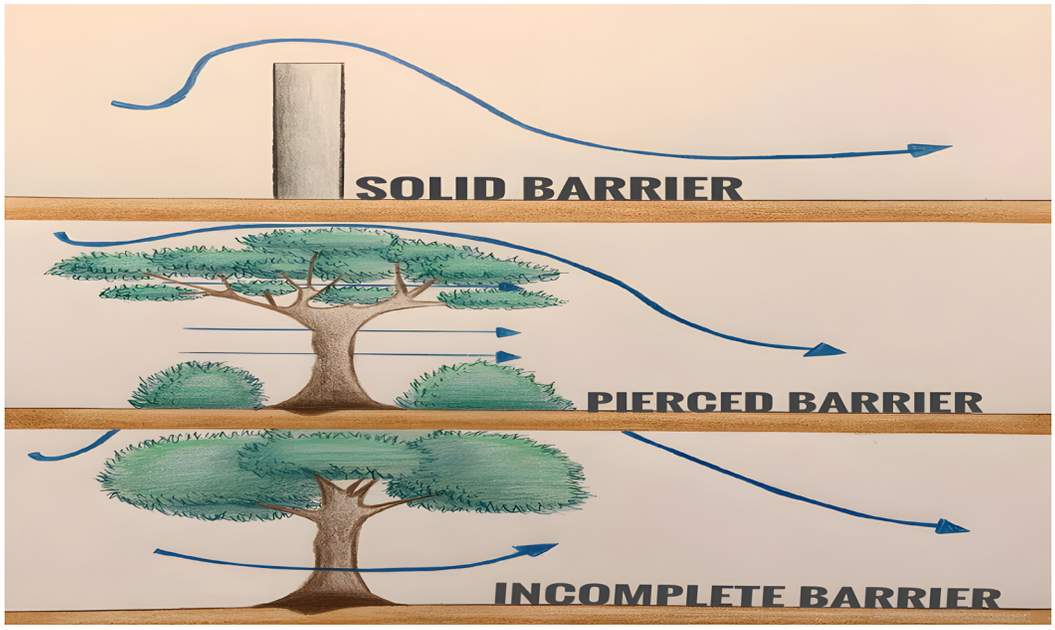


Figure 2. The picture showing to depict the blowing out of wind through three different types of tree barriers.

Nothing should be left on those parts that blind drivers cannot see traffic signs, especially at junctions and other crucial areas of safe traffic use. Their use in the streets and highways is limited because the big trees, especially the small and weak trees, are regarded as dangerous if they are to have other difficulties such as falling down or felled by storms. This will in a way moderate the heat being produced by concrete cities and other hard surfaces such as roads. Plant varieties of trees so that the view will be splendid and in case of developing monotony, the shade will be good. These are the standards and specifications that are complied with to achieve the implementation of proper, efficient; and sustainable Street and Highway tree planting that would enhance environmental quality and improvement of the streetscape of any metropolitan area.

Windbreaks for Agricultural Fields

In agricultural farms situated in arid regions, tree windbreaks are an appropriate way of protecting crops, conserving the soil, and improving general productivity. The windbreaks consist of rows of trees or shrubs planted for protection against strong winds, which might cause severe damage, especially in dry regions. The windbreaks protect the farms by the following ways:

Reduced Wind Speed: One of the benefits that windbreaks provide is a reduction in wind speed. The shelters greatly reduce the wind speed further downwind, which already protects crops against several types of wind-related damages, such as torn leaves, desiccation, and falling of plants. A decrease in wind speed because of windbreaks results in lesser temperature fluctuation in a more stabilized microclimate, which might help crops grow better.

Soil conservation: It prevents erosion of topsoil and hence its conservation. Strong winds in arid lands blow away the thin superficial soils. This thin layer contains most of the topsoil nutrients, highly needed for plant growth. Windbreaks trap wind-borne soil particles, hence reducing erosion and maintaining soil fertility.

Reduction of dust storms: Windbreaks surround and contribute toward the mitigation of the

frequency and intensity of dust storms common in arid regions. These have consequences of burying crops, deteriorating the soil and even producing diseases in the lungs among the workers in farms. Being able to slow down the wind to a considerable extent, the formation of windbreaks slows down the rate of evaporation from the surface of the soil hence having the advantage of conserving moisture. This is especially true in arid regions of the globe where water is conservatively used in most if not all aspects of existence.

Improved Irrigation efficiency: Decreased soil moisture deficit reduces the ability of the plants to evaporate water hence more water gets to the plants.

Improved crop yields: The crops with windbreaks are relatively high-yielding and these high-yielding crops are higher than those with winds.

Biodiversity and habitat creation: Trees serve as windbreaks opening shelters for birds, insects, and other animals important for farm diversification. These animals assist in pest control, pollination, and maintenance of the ecological system.

Introduction of beneficial species; Some of the trees used in windbreaks have additional values such as nitrogen fixation, e.g. Acacia sp., which enriches the soil, or fruits, e.g. date palms, or wood that may be harvested, e.g. Ziziphus.

Economic and social benefits; Though high, the one-time investment made in establishing windbreaks pays off when the accrued long-term benefits are considered. Increased yield, reduction of soil erosion, and better use of water are some of the benefits accruing from windbreaks that usually outweigh the initial cost incurred.

Criteria for Farm Windbreak:

Before the tree species to be chosen for arid areas to serve the windbreak purpose are selected, they need to be resistant to water and able to exist on very little water. Some of these species include Acacia, Prosopis, Salvadora, Vitex, and Tamarix sp. We have identified certain characteristics of fast-growing species that can provide more rapid windbreaks. More rapid vertically These species grow up fast and hence the roots also penetrate the ground more rapidly. In addition, such trees must also be extremely hardy in the unkind treatment of arid zones, they must be very resistant indeed.

The kind of plant may be used in windbreak plant mixture but in total number, more plant kinds in combination can be opportunities. A multiple interface of a variety of plant species will be more effective against changes in wind directions, pests, and diseases and will offer better ecosystem service. Wildlife has its habitat depending on the type of plant that is present in the region.



Plant mix (Prosopis - Conocarpus) Single type (Tamirix - Salvadora)

Figure 3. Examples for proper spacing of trees for windbreak:

They are different depending on the kind of trees that are used, if use protection, and or the environment of the site. Single-row windbreak: In the row, they are planted at approximately 4 meters apart from each other and from the trees. Used where the wind has to be perfectly stepped down and where the protection offered is moderate. To be used where there are low chances of clearances or where very slight wind bracing is needed. Where there are several rows of windbreaks then spacing and row spacing should be about 6m apart for row spacing. This way trees may be planted about fifty inches apart in each row.

Practice Xeriscaping and Sustainability in Arid-areas

Xeriscaping is a water-wise landscaping regime that seeks to create a usable environment in desert regions without using much water and being unfriendly to nature. When practicing Xeriscaping, it is very important to choose plants that are well-suitable to dry climates and the general climate of the place. Most of these plants are drought-resistant and better adapted to local environmental conditions than the others. Methods of applying water which is efficient with the help of conservation and use of mulch to minimize evaporation.

Remember when xeriscaping, select plants for dry spells, the right plant for a right that grows in arid regions. These plants are mostly less demanding on water and are well suited to climatic conditions. Sprinkle systems that identify water efficiency and then add conservation and mulching to minimize evaporation.

When implemented with sustainable practices xeriscapes can allow converting wasteland to beautiful, functional, and environmentally beneficial land that uses less water in irrigation and horticulture than conventional landscaping, supports the local ecosystem, and does not need much watering, fertilizer, or mowing. This will lead to some benefits of pests and weeds and hence less maintenance and lower water bills.

The role of Trees in Mitigating Pollution

Because Kuwait is one of the primary petrochemical industry zones, a much greater amount of hydrocarbon gaseous effluents in industrialized zones is heavily contaminated. This pollution can be moderate in impact on human health near such as urban residential areas. Traditional afforestation processes may to some extent address this issue.

As per the Swiss organization reports in 2023, Kuwait ranked globally eleventh for air pollution. For three major refineries (https://www.tefkuwait.com) in Kuwait, the estimated emission rates are 3.78 million tons per annum (mtpa), 3.2 mtpa, and 2.88 mtpa Afforestation should also be considered to take place since some species of trees can adsorb and degrade hydrocarbon and other pollutants through phytoremediation. Some species of eucalyptus trees have been reported to have the potential to absorb hydrocarbon compounds. Through phytoremediation, the pollutants get trapped and eventually can degrade into less harmful substances.

Planting more trees is regarded as the most effective means of carbon capture. They absorb carbon dioxide, one of the major greenhouse gases, from the atmosphere and store it in their biomass in the process called «Carbon Sequestration», hence helping mitigate climate change. Tree planting around different spots would help in cleaning the air; shelter residential communities, and the heather environment.



Figure 4. Planting trees near the highly polluted areas to reduce air pollution.

It says that one mature tree absorbs approximately 22 kilograms/specter-year of CO2. This is about one Imperial ton of CO2, over the average life span of a tree, which is about forty years. They are very important in the improvement of the quality of air since they are known to absorb various kinds of pollutants within the air. Actual gas removal would, of course, depend upon species type, size, and extent of the environment, but even one tree has a measurable impact; trees collectively do improve air quality in cities.

Integrating Expertise, Research Technology in Modern Landscaping.

Through human resources, artificial and natural sciences, along technology, it is possible to develop a 'hard' landscape, visually suitable and functional, efficient, and sustainable, especially where the conditions are harsh. Plant experts make recommendations about which plants to select, how to put them in the landscape, and how to care for the greenery for beauty as well as practical longevity. This can be realized by adequate knowledge of conditions within the region and effecting relevant practices that would benefit the physical world. Therefore, for more green areas and better environmental quality, educational and cultural factors should be also stated. These programs should therefore aim at raising public consciousness on plant value and impact on the quality of the environment. Chlorophyll contributes his expertise to the work with various types of plants and their use for the environment; also offers new ideas for the cultivation of plants in the desert. These results were reported by the Kuwait Institute for Scientific Research to the professionals in landscaping and ornamental gardening. The application of science is crucial to getting through tasks with issues, enhancing places, and growing a better-quality environment. Secondly, it is proven that technological tree-monitoring solutions can be implemented at large-scale landscape projects to improve management, maintenance, and sustainability. In large landscape projects, the use of drones, aerial imaging, geographic information sites, and remote sensing integrated with mobility applications would be efficient, sustainable, and effective ways of monitoring and managing trees for better health of the environment.

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