THE UNIVERSITY OF ARIZONA | COLLEGE OF AGRICULTURE & LIFE SCIENCES
CAMPUS ARBORETUM

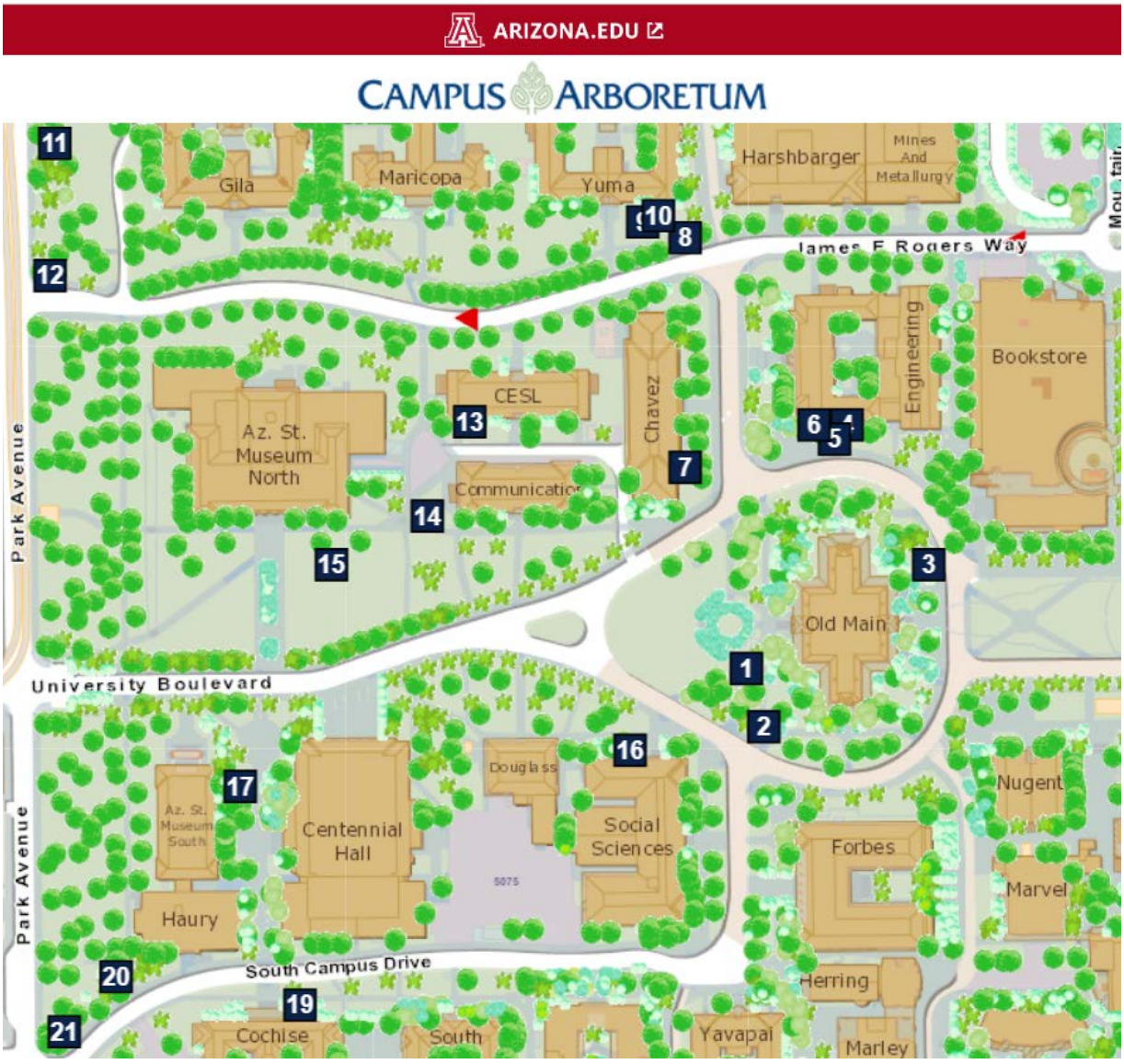
Trees Around the World

As Arizona's Land Grant institution, the University of Arizona is charged with offering applied research and education that addresses solutions to Arizona's changing needs. This practical focus led to major developments in Mining and Agriculture in the early years, and continued excellence in urban horticulture in later years through research, education and outreach. From the very beginning, trees and shrubs were planted, and studied, creating an "oasis" of learning in desert horticulture. Throughout its history, UA faculty used the campus grounds as a test site for potential new agricultural commodities, introducing olives, citrus, and date trees, to name a few. Later, in response to population growth, urban development and concerns for resource conservation, faculty interests expanded to include arid-adapted landscape ornamentals that were also tested on the main campus grounds.

Our commitment to using the campus grounds for research and education that supports Arizona has remained constant but, as attitudes towards the environment and landscaping needs have evolved, so has the campus landscapes. In the early 1900s, landscaping was inspired by Eastern Campuses with grass, ivy vines and shade trees producing an oasis in the desert. Fan palms, lining the walkways, showed a California influence as well. To continue the mission of landscaping and agricultural research, many plants were brought in from dry lands for testing in the Arizona desert environment. By the mid 1900s, the campus was at its highest water use. Flood irrigation was used to water the extensive lawns and vegetation.

In the late 1900s, due to growing population and increasing concern about water use, many more arid-adapted plants were evaluated for use as landscape ornamentals here. Warren Jones, professor of Landscape Architecture here (1966 – 1982), made this his life's work selecting trees perfectly suited to the urban microclimates, that thrive with little care and eventually becomes a noble example of a species. He brought hundreds of seedlings from around the world to try on campus. The result is that many trees here are widely traded in the southwestern United States. In this tour, you will learn how plants collected from around the world are useful to humans and our increasingly important need for diverse plantings in desert cities.

Trees Around The World – Map of Tour Stop Locations



1. Aleppo pine or Jerusalem Pine
   Botanical Name: *Pinus halapensis*
   Family: Pinaceae
   Origin: Mediterranean

   Question: Where is Aleppo?
   Answer: Syria
   History: In Greek myths, these pine trees were planted near ancient Greek temples, and ceremonially decorated. They are believed to be the first Christmas trees!
   Interesting facts: They have very short needles, that grow out of the branch in bunches of two. The cones take two years to mature and a few more years after that before they open to release the seeds. The tree provides the flavor for Greek retsina wine.They are also the species featured in the famous “The Big Trees” painting by Paul Cezanne.

2. California Fan Palm, Desert Fan Palm or Arizona Fan Palm
Botanical Name: *Washingtonia filifera*
Family: Arecaceae
Origin: Mexico, Southwest US

Question: How does a palm trunk differ from other trees?
Answer: Palms are monocots with a distributed vascular system and fibrous root system. The vascular system is made up of xylem cells, that take water with nutrients to leaves and phloem cells, which distribute food from leaves throughout the plant.
History: 50 to 70 million years in the present form
Interesting facts: This species is closely related to *Washingtonia robusta* (Mexican Fan Palm), which is a taller tree with a thinner trunk and more flare at the base.

3. True Date Palm
Botanical Name: *Phoenix dactylifera*
Family: Arecaceae
Origin: Middle East

Question: Can the dates be eaten fresh when ripe? Answer:Yes
History: Cultivated for 6000 years. Moors brought to Spain and Spanish to America
Interesting facts: This particular tree was a gift from Iraqi students to the Dean of the College of Agriculture for support in establishing a college of agriculture in Iraq. The species is dioecious. This means that male and female flowers are on different trees. One male plant can pollinate 100 females. If you look around, can you find the male plants? (Perhaps by the fountain?). One tree can produce 200 lbs of dates. In cultivation, to ensure high yields, humans must climb the tree to pollinate it, and then thin fruit as it develops several times before harvest. This is considered a holy tree, mentioned often in both the Bible and Koran.

4. Floss Silk Tree
Botanical Name: *Ceiba insignis* (previously *Chorisia insignis*)
Family: Malvaceae
Origin: Tropical/subtropical forests of South America

Question: Why the prickles? Protection or water storage?
Answer: The purpose served by the sharp protrusions is not known.
History: This specimen is recognized as a Great Tree of Arizona.
I**nteresting facts:** The White Floss Silk tree with its menacing thorns is native to the tropical forests of South America where it is known as the National Tree of Guatemala. It is winter deciduous and blooms beautiful huge white lily-like flowers in the fall that remain on the tree through January unless damaged by frost. The species has a bottle shaped, green trunk with chlorophyll for photosynthesis.The bark on young trees do not contain the characteristic prickles.This tree may grow to 230 ft. tall, with growth of as much as 15 ft. in a year but can also be potted and turned into a bonsai. The pear-shaped fruit pods produce a “cotton” or floss used in pillows, life vests and insulation. Its wood is flexible and sturdy – good for canoes, paper and ropes. The seeds produce oil for cooking and industry. The seeds are also used to make a hallucinogenic drink, explaining the local name “palo borracho” or “drunk tree”. This species is very important to Mayan cultures. It is known as a “World Tree” which represents their creation mythology representing underworld, terrestrial, and heavenly realms by its roots, trunk and canopy, respectively.

5. Cork Oak Tree
Botanical Name: *Quercus suber*
Family: Fagaceae
Origin: Mediterranean

Question: Does removing the cork kill the tree?
Answer: No.
Interesting facts: The thick cambium, which is part of the bark, can be removed every 9 to 12 years and used as cork. Portugal is the biggest producer of cork in the world. On the tree, the thick corky bark provides insulation of the delicate phloem/vascular cells in the event of fire. These trees can live a long time – often more than 200 years!

6. Assyrian Plum
Botanical Name: *Cordia myxa*
Family: Boraginaceae
Origin: East Asia

Question: Is the fruit helpful in growing hair?
Answer: Yes (maybe!)
Interesting facts: This deciduous species can grow over 40 feet in height. It produces chains of small white flowers with male and female flowers growing on the same tree. The fruit turns brown slowly and becomes a sweet edible treat. Although similar to a true plum (Prunus sp.), this is not a relative. Partially ripened fruit can be used to make paper, glue, and, when pickled, is used to treat indigestion. Both the bark and the roots can be used to make a treatment for coughs and sore throats.

7. Mexican Fan Palm
Botanical name: *Washingtonia robusta*
Family: Arecaceae
Origin: Baja and Sonora Mexico

Question: Are the fruits edible?
Answer: Black/brown fruits are edible
History: The Palm was originally introduced in Los Angeles to beautify the town for the 1932 Summer Olympics.

8. European olive
Botanical Name: *Olea europaea*
Family: Oleaceae
Origin: Native to the coastal areas of the Mediterranean basin

Question: Where are the olives? Look at other trees. Do green and black olives come from the same tree? **Answer:** Yes!

History: In an Athenian foundation myth; the first olive grew on the Acropolis. This plant is also mentioned in the Odyssey. These are the original trees planted in the 1890s. They are symbolic of peace, wisdom, glory, fertility, abundance, power, purity.

Interesting facts: Olive trees are native to the Mediterranean basin – Northern Africa, Western Asia and Southeastern Europe. This is an evergreen tree growing to 32 ft. by 26 ft. It is relatively short, wide, hardy, and slow-growing. The leaves are silvery grey and replaced every two years.Some olive trees in the Old World are centuries (or even millennia) old. Olive tree culture has been documented from the year 4800 BCE in Cyprus. Archaeologists have found evidence of olive oil productions as far back as 6,000 years ago in Israel. Athenian myth says the first olive was given to Athena by the god Poseidon and the first tree grew in Acropolis. Throughout history, olives have been symbolic of peace, wisdom, glory, fertility, abundance, power and purity. They are well adapted to Tucson climate and although, they are allergenic, there are non-allergenic varieties available.

9. Bunya – Bunya Tree
Botanical Name: Araucaria bidwillii. (Coniferous but not a Pine)
Family: Araucariaceae
Origin: Australia

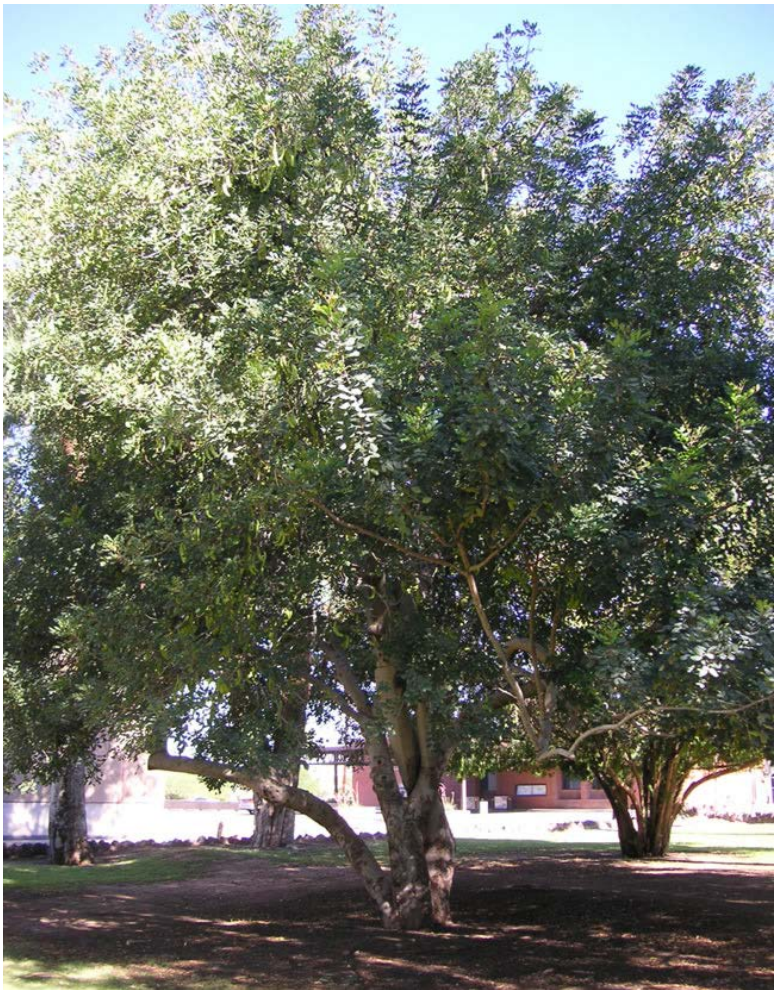
Question: Why do the branches have thorns and the leaves sharp points?
Answer: Possibly to discourage Bush rats?
History: This species is considered a living fossil, since it is known to have existed since the time of the dinosaurs. It was wide spread but now grows in only a few locations around the world.
Interesting facts: This species grows up to 90 feet tall. The trunks are branchless half way up from the base and branches contain many deep green leaves. Juvenile leaves are glossy and sharp, while mature leaves are smaller, stiff and sharp to touch. Female fruiting cones eventually produce football-sized pods every few years after the plant has reached reproductive maturity. Seeds produce a tuber, an underground storage organ, that waits for several years to grow. The popularity of the seeds with the Aborigines of Australia, is recognized by a Bunya Festival, which celebrates peace.

10. Chaste Tree or Monk's Pepper
Botanical Name: *Vitex agnus-castus*
Family: Lamiaceae
Origin: Mediterranean, North Africa

Question: Does the leaf shape suggest any other plant?
Answer: the palmately compound leaf resembles the leaf from the cannabis plant.
History: Athenian women used leaves and stems in their beds to remain chaste.
Interesting facts: The fruit stimulates production of prolactin, which increases lactation in women. The pepper-like berries are claimed to be an anaphrodisiac (suppresses libido), hence the common name of Monk's pepper. There are also claims the fruit is an aphrodisiac!

11. Carob Tree
Botanical Name: *Ceratonia siliqua*
Family: Fabaceae
Origin: Mediterranean

Question: What is the connection to the gold unit “carat”?
Answer: The seeds were used in ancient times as a standard of weights because they were so equally weighted at ~0.2g.
History: A Roman coin of pure gold weighed 24 Carob seeds, hence 24-carat gold is pure gold. Pronunciation of the species name, Ceratonia, acoustically resembles the word “karat”.
Interesting facts: Flowers are small and unisexual (male or female). It takes about 11 months for them to ripen into large brown pods with smooth, oval beans inside. Pods can be ground and used as a highly nutritious and palatable substitute for cocoa. The inner walls of the carob pod contain sugar and the beans are high in fiber, calcium, antioxidants and low in fat. Further, for those with pet dogs, this is a great alternative to having chocolate around the house, as it is not toxic to dogs as is chocolate.



12. Italian cypress, Mediterranean cypress
Botanical Name: *Cupressus sempervirens*
Family: Cupressaceae
Origin: Native to the eastern Mediterranean region.

Question: What does sempervirens mean?
Answer: the name means ever-green!
History: This is a very long-lived tree with some living more than 1000 years.
Interesting facts: This cypress is native to the eastern Mediterranean region. Like the olive, this tree is very long lived, some being over 1000 years old. This evergreen usually reaches a mature height of 40-60 ft., but can reach up to 115 ft. in height. It is rarely wider than 3-5 ft. The branches grow upright and are brown to gray in color. The scale-like leaves form on the tiny branches from the ground to the top of the tree. The gray-green leaves are less than 2 in. long and also grow upward.The wood is both durable and highly fragrant. Notably, the wood of this species was used on the doors of St. Peter's Cathedral in Rome. It was often planted by graves and used in funeral processing in Rome. It would fumigate the air during cremations.

13. Orchid Tree

Botanical Name: *Bauhinia varigata var. purpurea*

Family: Fabaceae

Origin: China, India, Pakistan

Question: Does the leaf shape remind you of an animal?

Answer: Many people find the clefted, bilobed leaf resembles the bifurcated hoof of an animal, like a camel or goat!

History: Considered the world's most beautiful tree by some.

Interesting facts: This is not a member of the orchid family. It is in the bean family. It blooms in late winter when the branches are bare. The genus contains over 200 species, most of which have purple or white flowers. The flower is edible and used in some Indian curries.

14. Chinese Pistache
Botanical Name: *Pistacia chinensis*
Family: Anacardiaceae
Origin: China

Question: Does this tree produce pistachios?
Answer: No, although this is a close relative of the true pistachio tree, *Pistacia vera.*
Interesting facts: This Chinese Pistache is a native to East Asia's hilly forests and rocky soils. This makes it one of our hardiest urban street trees. It averages 30 ft. tall and can handle heat, drought, and cold temperatures. The pistache produces beautiful fall foliage. This species is both deciduous and dioecious. The latter means that unisexual male and female flowers reside on different trees. They flower March-May & August-November. The species produces edible young shoots, but the fruit itself is edible. The species is valued as an ornamental due to its beautiful, red, fall foliage, persistent red fruits and as a source of valuable wood. The *P. chinensis* is used mainly as an ornamental or shade tree in parks and along streets. However, research has recently been done on producing biodiesel from the seed oil. This Chinese pistache is one of the Great Trees of Arizona on campus. If you look around this location, you can compare this member of the Pistacia genus with others. Take note of the differences with its neighbor the Mt. Atlas Pistache, which also produces a valuable wood but is more frost tolerant.

15. African Sumac

Botanical Name: Rhus lancea

Family: Anacardiaceae

Origin: Southern Africa

Question: How can you tell the sex of a tree?

Answer: Look for seeds from the female.

Interesting facts: This plants is easy to identify by the leaf, trifoliate-compound (three-part) and glossy dark green. It is in the same family as poison ivy and cashew. The species is dioecious – meaning both male and female trees must be nearby to produce fruit/seed. Although this plant was originally introduced to the US as a landscape ornamental, given its potential to adapt to the many environmental challenges in the Sonoran desert, it is now considered an invasive weed. Planting is discouraged.

16. Sissoo Tree or Indian Rosewood
Botanical Name: *Delbergia sissoo*
Family: Fabaceae
Origin: India

Interesting facts: This is a very large deciduous tree with small clusters of white to pink flowers that eventually producing thin pods. This moderately fast-growing deciduous tree reaches heights of around 65 ft. high with a 10 to 20 ft. spread. Trees have been documented that were up to 82 ft. high and 10 ft. in diameter. The sissoo is tolerant of saline, sandy soils, as it is naturally found along river banks and very rainy climates. It can handle up to 4 months of drought. The sissoo tree is the state tree of Punjab, India and the provincial tree of Punjab Province, Pakistan. Also known as rosewood, it produces oil used for cosmetics with anti-aging and anti-acne agents. Next to teak, its wood is the most highly prized because of its high density and dark brown color. Its beautiful wood is used for a variety of purposes including furniture, skis, instruments and martial art weaponry. The dark brown heartwood is extremely durable and resistant to termites whereas the sapwood is white and much more susceptible.

17. Calamondin
Biological Name: *Citrofortunella mitis*
Family: Rutaceae
Origin: China

Question: How does the taste of the peel compare to the inner fruit?
Answer: Much sweeter! We advise the fruit and peel be eaten together!
History: This plant is a hybrid produced by crossing a kumquat and a mandarin orange.
Interesting facts: This plant is very cold hardy. The juice from the fruit is, not only used in cooking, but it is also used as a deodorant and as an ink remover.

18. Eucalyptus
Botanical name: *Eucalyptus* spp. (700+ species)
Family: Myrtaceae
Origin: Australia

Question: Why are they called 'gum trees?
Answer: They produce a gum-like sap when the bark is punctured or wounded.
History: Many eucalyptus trees were imported as a they were considered desirable for their fast rate of growth, for lumber and erosion control.
Interesting facts: Eucalyptus trees can grow 40 ft. or more in just 20 years. They are often called "widow makers" because of their habit of dropping large limbs. Although they poduce some of the hardest and strongest timbers in the world, they are not widely used because of the difficult grain. The bark is variable, from smooth white to chocolate brown, usually with gray mottled patches and medium textured. Eucalyptus shed their bark because they need room for the massive trunk to grow. The bark must constantly regenerate to keep the delicate vascular tissues underneath well protected. Eucalyptus trees are high water users - on warm days eucalyptus forests transpire so much water and volatilized organic compounds (terpenoids) that they become shrouded in a smog-like mist. The Australian Blue Mountains take their name from the haze produced by the eucalyptus trees growing there. This species was used by the Aborigines as a fish poison (leaves & wood). They also harvested the roots for water by holding them vertically to drain out the water. This tree is commonly planted as a shade tree, however, compounds that are toxic to other plants make them poor candidates for composting or planting directly underneath.

19. Canary Island Date Palm
Botanical name: *Phoenix canariensis*
Family: Arecaceae
Origin: Canary Islands

Question: Are the fruits edible?
Answer: Yes, but there is very little flesh on the fruit to make it worthwhile!
Interesting facts: Palm sap is used for making palm syrup. The plant is invasive in New Zealand.

20. Mexican Blue Fan Palm
Botanical name: *Brahea armata*
Family: Arecaceae
Origin: Baja California/Mexico

Question: Are the fruits edible?
Answer: Yes, after roasting!
Interesting facts: This palm tolerates greater extremes of cold, heat and wind than most palms. It is a great ornamental tree, producing highly fragrant flowers on long, pendulous limbs (inflorescences).

21. Golden Rain Tree (China tree)

Botanical Name: *Koelreuteria paniculata*

Family: Sapindaceae

Origin: China and Korea

Question: Why the name, Golden Rain?

Answer: The plant produces pendulous sprays of golden flowers.

Interesting facts: This is a deciduous tree, with deeply serrated pinnately-compound leaves. The fruit is a beautiful lantern-like shape with papery walls, containing chambers with a 5-8 large round seeds. These fruits turn from green to brown when mature. The seeds are edible when roasted. In some countries, the trees is considered invasive because of the many seeds it produces.

To learn more about these plants, including cultivation requirements, natural history and their location on the main University of Arizona campus grounds:

1. Go to http://arboretum.arizona.edu/
2. Click the "Find Trees & Tour" tab.
3. On the drop down menu choose "GIS Map"
4. Once map is open click on magnifying glass and search for whatever tree you are interested in!

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