

Under the Oaks

Newsletter of the Arboretum at Memphis Botanic Garden

Volume 10

Meet Chris O'Bryan, Certified Arborist



Chris welcomes volunteers who don't mind getting a little dirty, so give us a call if you're interested.

When you take a walk through the Garden, gazing at all the beautiful beds, flowers, and plantings along the grounds, you may not notice this high-flying staff member!

Chris completed the extensive coursework and hands-on training required to become a Certified Arborist this spring.

So, next time you're here for a visit, look up...and admire the hard work of Chris and other arborists who keep our trees happy and healthy!

Diospyros-Tree of Many Virtues

by Jenny Sabatier

A group of children were walking home from school one October with a new boy whose family had just moved into the area. They turned the corner, and there was an open field to their left with a tall, handsome tree in the middle. Orange fruit speckled the ground around it.

One of the boys yelled, "Let's eat!" and they all went over and picked out a fruit. They got a firm one for the new boy, but

Tree Oddities

by Jenny Sabatier

Those innocent looking flowers we love so well...what are they really up to? The truth is they're out there trying to lure something to fertilize them. They call upon whatever can help bring pollen to them, be it insects, birds, animals, or even wind. They do this by using nectar, fragrance, color, shape, a whole arsenal of attractions. Sexual reproduction methods are so diverse it's mind-boggling, but hopefully it results in the pollen reaching the ovary.

The trees we'll consider are all specimens from

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got cracked ones, turning brown, for themselves. "Eat up," they encouraged the boy, and wanting to be part of the group, he took a big bite of the orange globular fruit. His mouth twisted, he spit and grimaced, throwing the remainder on the ground. The others, smacking their lips, and spitting out seeds, downed their treats while giggling at the new boy's pathetic face.

"Guess that's your first persimmon" said one. "We all got tricked ourselves. Now you're one of us." Many people have been introduced to the American persimmon in its not quite ripe stage, when tannic acid is present and puckers the mouth, and some have never tried a persimmon again.

Nevertheless, these native trees have much to offer. Persimmons were a regular part of the southeastern Indian tribes' diets, helped feed the explorers of this area when starvation threatened, and settlers quickly learned to appreciate the fruit. Although healthy and delicious when fully ripe, you won't find *Diospyros virginiana* in a grocery store as it doesn't travel well.

There are a bevy of wild animals and birds that enjoy the fruit, and dogs like it as well, but the creature that is most often associated with it is the opossum, and

pre-historic families: *Taxodium distichum*, (Bald Cypress), *Magnolia grandiflora*, (Southern Magnolia), *Ginkgo biloba* (Maidenhair Tree) and our native *Diospyros virginiana*, (Common Persimmon), The bald cypress is a conifer or cone-bearing tree, whose ancestors, like the ginkgo's, appeared in the Triassic age, along with the dinosaurs, about 185 million years ago. The Jurassic age saw the appearance of the angiosperms, or flowering trees, including the magnolia family. More angiosperms developed in the Cretaceous era, about 144 million years ago, and many trees living today had ancestors that witnessed the extinction of the dinosaurs. This long history was bound to create some oddities in behavior along the way to modern times.

The bald cypress, although a conifer, or gymnosperm, turns a beautiful rust color in autumn and drops its needles. Almost all other conifers retain their needles over winter. Bald cypress is monoecious, having both male and female flowers on the same tree. The pollen from the male flower is sent by wind to fertilize a female flower. Although bald cypress will grow on land, it is a wetland tree, and needs water for seed dispersal, germination and early growth. Most seeds will only germinate after being under water for one to three months which causes the hard seed coat to soften. When the water retreats the seeds sprout in the saturated ground, but the new leaves must remain above water while developing. Bald cypresses can

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persimmon trees are sometimes known as possumwoods.

The tree can grow up to 90ft, but normally is 35' to 60' in height, 20' to 35' wide. The diameter of the trunk is small for such a tall tree. The leaves are dark green, glossy on top, pale underneath. The dark grey-black bark is patterned in uneven squares, and the wood is very hard. Golf club heads, billiard cues, flooring, and other items requiring a strong, heavy, close-grained wood are made of *Diospyros virginiana*. The tree sometimes colonizes and forms thickets

Although our native persimmons are astringent, *Diospyros kaki*, the Japanese persimmon, has both astringent and non-astringent cultivars. They are smaller trees than *virginiana*, and normally succeed in zone seven. They need moist, well-drained soil and full sun. The non-astringent cultivars include Fuyu, whose fruit is seedless and non-astringent even before it ripens. Fuyu is sometimes available in some nurseries and garden shops, and in catalogues. And there's good news about our native persimmon. Much work is being done by breeders to produce improved trees from early cultivars of *virginiana*, such as Early Golden, Garrison, and Killen, so we may see, before too long, cultivars from our

reproduce asexually from their stumps, one of the few conifers that can do so. Amazingly, stumps up to 200 years old may sprout, but the new growth is less likely to survive wind damage than sprouts from younger stumps. The 'knees' that develop when the tree is situated in shallow water were once thought to provide the tree with a breathing mechanism, but are now considered primarily to aid in supporting it. It is a long-lived tree; some are over a thousand years old.

Magnolia grandiflora is another southern tree of note. It is among the most ancient flowering plant families. *Magnolia* fossils have been discovered in rocks of the Tertiary period going back over 100 million years and the tree has remained relatively the same throughout the ages. The open, saucer-like flowers, in which sepals and petals are alike and called tepals, and the spiral arrangement of the stamens indicate the oldest type of flower structure. By the time the flowers bloom and the stamens shed their pollen, the stigmas or female parts have become dry and unreceptive. The strange fact is that magnolias are pollinated before the flower opens. Beetles, also the descendants of ancient ancestors, become covered with pollen from older opened flowers, and enter the unopened blossoms between the overlapped tepals and pollinate the stigmas. Although the beetles feed on the flower parts, the plant continuously develops protective systems on ovaries, fruits and leaves. Some magnolia

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native trees with firm, delicious fruits that will have few or no seeds.

Vertical Mulching

by Ryan Masson

Vertical mulching emulates the work done by years of autumn leaf litter on a small scale. Over several years, a tree can create its own fertilizer. Blankets of leaves, left to accumulate yearly, decompose and become excellent, nutrient-packed topsoil. Newly-dead leaves function as mulch each fall. However, bags of raked leaves waiting at curbside are clear indicators that this cycle has been blocked.

The popularity of grass lawns has curtailed leaf fertilizing in residential areas. Healthy swathes of grass are also major competitors for water and nutrients in the ground. Yet another obstacle trees face in urban and suburban areas is compact soil, which is not conducive to the flow of oxygen, water and carbon dioxide into and out of the ground. Tree roots in these conditions may be deprived of oxygen and water or may be overexposed to carbon dioxide trapped beneath the surface.

species have adapted their flowers to the more modern mechanics of pollination by bees, wasps and other less primitive pollen carriers.

Ginkgo biloba has survived unchanged for 200 million years; has withstood the shifting of continents, the rise of mountain ranges, has witnessed ice ages, and the birth, evolution, and extinction of dinosaurs. Its distinctive leaf appears in the fossil strata of the Paleozoic era, the ginkgo was distributed world-wide at that time. When man arrived on earth the ginkgo could be found only in China. It is not found in the wild now; its presence is the result of its domestication by priests in temple gardens in China, and later in Japan. It arrived in Europe in 1730, and has become increasingly popular because of its beauty and resistance to pests and disease. It is dioecious, and most people prefer planting a male, for the female's 'fruit' is actually a naked seed with a nasty smell. Its common name, maidenhair tree, refers to the resemblance its leaves bear to the maidenhair fern. It is a gymnosperm, which bears naked seed, but is not a conifer. It differs from the angiosperms (flowering trees) in its reproductive cycle; its sperm must reach the female organ by swimming. It is the only member of the Family Ginkgoaceae. In autumn, Ginkgo lovers await the changing of the fan shaped leaves to a clear yellow, a beautiful show worth viewing.

Of all the unusual reproductive activities trees have resorted to, Diospyros virginiana may be

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Through vertical mulching, an arborist aerates the dense soils beneath a particular tree. Starting from an 8 ft. radius away from the trunk, the arborist drills 15 to 20" deep holes around the tree using an electric or gasoline drill. Each hole is about 2" wide. He then partially refills these underground columns with a mixture of sand and peat moss or pea gravel. He finishes the holes with a loose fertilizer or mulch. The new columns of porous soil act as conduits for water, oxygen and the toxic by-product carbon dioxide.

In essence, vertical mulching re-establishes permeable topsoil on a very manageable scale. Within one year, the targeted tree should show signs of recuperation.

ahead of the game. Our common persimmon is generally dioecious, with the male and female flowers on separate trees. However, on the cultivated virginianas, such as Early Golden, it was discovered that some female trees produced seedless unfertilized fruits when no male trees were nearby. Later they produced fruits with seeds and the growers would find that male flowers were growing on weak branches of the female trees, and male trees had shoots that grew female or bisexual flowers. Breeders are continually coming up with new introductions and cultivars. Watch for the new arrivals to see what they've developed.