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MELALEUCA MENACE

In previous issues of Roots and Shoots, articles have appeared on the invasive Melaleuca tree. The University of Florida's Fort Lauderdale Research Center have a variety of projects underway on its 100 acre urban campus. One concerns the eradication of Melaleuca trees.

Spreading at a rate of 15 acres a day, the melaleuca brought to Florida from Australia, has become one of the most troublesome invasive plants.

According to Robin Giblin-Davis, professor of entomology, it is overwhelming the Everglades and coastal wetlands. More than $2.2 million is being spent annually trying to control the tree. Loss to the local economy range as high as $168 million.

To slow and hopefully stop the rampage, Giblin-Davis is working with the U.S. Department of Agriculture to find effective natural predators to control the tree without the use of pesticides.

In 1997, a leaf eating weevil, (melaleuca snout beetle), was released in Broward County, and is showing some promise. Other biological controls found in Australia with the help of the USDA are also being tested.

Giblin-Davis said studies have shown that a small fly (Fergusonina) and a microscopic nematode attack the flower and leaf buds of the melaleuca, preventing seed development.

"Preliminary research suggests these two biocontrols working together are very host specific, meaning they shouldn't become a problem on other plants. This bodes well for releasing the Australian fly and nematode parasites into southern Florida as another natural, non-chemical way of controlling the invasive tree" says Giblin-Davis. SOURCE: IMPACT, Vol. 15, No.3, Spring, 2000

AQUATIC PLANTS

are another major problem in South Florida's fragile environment. Working with the UF/IFAS Center for Aquatic and Invasive Plants in Gainesville, David Sutton, professor at the Fort Lauderdale Research and Education Center, is developing methods to manage exotic, invasive weeds such as torpedograss and hygrophilia while also promoting the ornamental value of other aquatic plants.

"Torpedograss is a major weed along shorelines. It produces rhizomes below the soil surface that are difficult to kill," says Sutton. "We're also evaluating different herbicide timing and application rates to inhibit their growth." Also being evaluated are different herbicides to control hygrophilia, a major weed problem in South Florida Canals.

Two native aquatic plants, sky flower and pond apple, have potential as ornamentals, he says.

With deep blue petals, bright yellow stamens and dark green leaves, sky flower could be used by homeowners in small ponds and garden containers. They would like to introduce the pond apple into the residential landscape, too. "It may grow well in wet areas or on the shoreline of small ponds". The pond apple produces an attractive flower as well as an apple that can be made into jellies and jams but isn't eaten raw like regular apples.
A slow release fertilizer is being used to help provide a constant amount of nutrients for new aquatic ornamentals and prevent nutrients from leaching into water and causing algae problems.
SOURCE: IMPACT, Vol. 15, No.3, Spring 2000

FROGS AND TOADS

Frogs and toads are members of the class Amphibia, the first backboned animal to live on land. Amphibia, derived from Greek "amphibios" means "double life". Most toads and frogs have two stages, larvae (tadpole) and adult. There are about 80 species known in the U.S.; of these 22 frog (and 4 subspecies) and 5 toad species are native to Florida.

Frogs and toads look different in several ways. Most toads have dry, warty skin, where frogs have moist, smooth skin. Toads have a pair of parotid glands bulging out from behind the eyes that produces a bufotoxin that protects them from being eaten by most animals. Most are too small to severely affect people or pets. The exception is the non-native marine toad. They are large enough to release toxin amounts that can make people seriously ill, cause skin irritations, and kill dogs and cats. Frogs don't have these glands, so there aren't any poisonous frogs in Florida.

Both have traits that allow them to survive on land. Adults of both have a keen sense of smell controlled by a smell-taste organ in the nasal passages. Both have a wide range of vision and are sensitive to movement. They can't turn their heads, but their large, bulging eyes give them excellent side vision to see potential predators. They also have a well developed outer ear, located behind the eyes.

Frogs and toads live in a wide variety of habitats throughout Florida. Adults of many species spend considerable time in dry upland areas and only migrate to wetlands during the breeding/egg laying season.

They both have two life stages, the larvae (tadpole) and the adult stage. When tadpoles metamorphose into adults, their body structure and breathing organs change. The tail disappears, legs form, the mouth enlarges, lungs replace gills, and other organs transform to adapt to life that includes breathing air, eating different food items, and living on land as well as in water.

All adults are predators and feed on a variety of insects. They have a large mouth and a long, sticky tongue used to capture prey. The hunting style is to sit and wait for food to come to them. When an insect moves within range, they turn their body (if necessary), lunge forward, and shoot their tongue through the air. They also pursue slower prey on the ground. Because they swallow their prey whole there is little need for teeth. They lack throat muscles to help them swallow. They sort of push their food into the stomach with their upper head muscles and eyes. Tadpoles are herbivores (plant eaters) and feed mostly on algae, which they filter from the water.

Frogs and toads move to bodies of water to breed. Males move to the pond first and begin calling. Usually, this activity takes place on rainy nights when the barometric pressure is falling. Once the female arrives she selects a mate. When the male and female come close together, the male clasps the female around the waist with his forelegs. This stimulates hormones in the female that cause the eggs to be released. When this occurs, the male releases sperm, fertilizing the eggs. The eggs remain in a gelatinous mass until hatching. Because they have no protective shell, they must remain in a moist environment.

Temporary ponds that may contain enough water to support eggs and tadpoles once a year or even once every three years are important to a majority of frogs and toads. The temporary nature
of these ponds eliminates fish and other aquatic animals that prey on eggs and tadpoles. Many toads and frogs are so dependent on these fluctuating systems that they don't successfully reproduce in permanent waters.

Another threat is the introduction of exotic (non-native) species. The extent of competition and disease transmission that are being caused by exotics isn't known, but healthy populations of several species are well documented.

Those who live near water may hear a variety of calling throughout the year. Frogs and toads are attracted to any body of water for breeding, including bird baths and swimming pools. If bothered by this, there is little one can do other than to make the water inaccessible with screening or netting. If the noise interrupts sleep, consider closing the windows or turning on a fan or some other noise-making device that is less disturbing but will drown out the frog calls.

The non-native marine toad may become a pest by eating pet food if left outside. They also cause dogs and cats to become deathly ill. Huge Cuban tree frogs eat native frogs as well as insects. These are introduced species and aren't protected in Florida. They can be removed and disposed of humanely. If you don't wish to handle them contact a local nuisance animal trapper.

Permits are required to sell or possess for sale any live amphibian or carcass, skin or any body parts of amphibians native to the state of Florida. A commercial freshwater fish dealer's license is required to take for sale or to sell frogs. The gopher frog, pine barrens tree frog, and Florida bog frog are listed as species of special concern and are protected from taking, possessing, and selling of whole animals, body parts and eggs. SOURCE: SS-WIS-50

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**LILIES**

Lilies can be used anywhere in the garden and are most effective in groups. Bulbs can be left undisturbed for years, but should be lifted and divided when plants become crowded. Propagate in the fall with the small bulbs that develop around the main one.

Plant in fall or spring, mixing up to 1/3 organic material with soil to a depth of 1'. Set bulbs 9”-18” apart and cover with 4”-6” of soil. 5 to 6 hours of sun is needed. Fertilize in spring and again 2 months later. Source: Seminole Greenthumb, Spring 2000

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**PEACHES AND NECTARINES**

Commercial production of peaches and nectarines in Florida is estimated at 3,000 acres most of which is in the panhandle. Cultivars grown in this area require 400 to 650 hours of chilling. Some cultivars that require 200 to 300 hours of chilling have been developed for growing in central Florida. Chilling hours are relative to the amount of cold received during average winters.

Peaches planted for home use represent a sizeable amount of the total number of peaches grown in Florida. Peaches require more specialized care than many homeowners give.

Site selection and cultivar choice are the most important factors to be successful. Good air and water drainage are essential to tree growth and production. In selecting a site, avoid low areas and sections characterized by late spring frosts. Even in central Florida critical temperatures for
fruit kill can occur throughout February and March in cold locations. Late-blooming due to delayed dormancy, is not as good insurance as good site choice. Buds that have begun to swell withstand temperatures to about 20°F. Open blossoms show injury at 26°F. Following petal fall, the young fruit are generally killed by minimums of 28°F.

Peaches can be grown on a wide variety of soils, provided there is good internal drainage in the upper 4' to 6'. Avoid "hardpan" soil unless an excellent system of subsoil drainage is provided. Water damage has occurred on normally well-drained soils of heavy texture during exceptionally wet summers.

June-budded trees 2½' to 4' high are a good size to plant. Although acceptable, smaller trees are likely to have rather limited root systems and may start poorly in light soils. Larger sizes are more expensive and harder to handle, but grow better in sandy soils and yield more during the first 4 seasons.

Cultivars for home planting should be budded on rootstocks resistant to root-knot nematode species "Meloidogyne incognita" and "M. javanica". Okinawa and Nemaguard peach stocks have satisfactory resistance and are the only stocks recommended for Florida. Other stocks such as Elberta, Tennessee "Naturals", Lovell and local seedling rootstocks are susceptible to both root-knot species. A new nematode (M. incognita, race 3) has been found that infests Okinawa and Nemaguard, but it isn't yet widespread in Florida.

Bare-root peach trees are generally set in the dormant season (December) so the new root system can develop before spring growth begins. Container grown trees can be planted anytime of year. In well-drained soils, plant slightly deeper than grown in the nursery. They don't need watering at planting if the soil is moist and packed well around the roots. Trees planted early in the winter and kept free of weed competition will need minimum watering the first season. Usually 1 or 2 basin-type irrigations in April and May will be required, except in unusually dry years or on coarser sands. Keep an area 3 to 4 ft. out from the newly set tree free of weeds the first season.

Prior to planting, apply liming material as needed to bring soil pH to 6.0 to 6.5. Dolomitic lime is recommended, especially on sandy soils where magnesium level in the soil is low.

Because of soil type variations, there is a distinct difference in fertilizer recommendations for peaches growing in loamy soils and those growing in sandy soils. Fertilizers for sandy areas should approximate a 12-4-8 formulation. All should contain 1% or 2% zinc oxide equivalent when used on young trees.

Quickly available nitrogen, applied sufficiently ahead of bloom to be taken up by the tree, is believed to improve fruit set. Delayed availability of nitrogen may delay fruit maturity and reduce colors. It's recommended that only mineral sources of nitrogen be used in spring peach fertilizers prior to harvest.

Sandy soils are sometimes deficient in minor elements other than zinc. Boron and occasionally manganese have been needed to correct symptoms.

Excessive nitrogen can delay fruit ripening up to 10 days. Control weeds so that the fertilizer is made available to the tree. Call the Extension Service at (321) 697-3000 for additional information on fertilization and cultivars for our area.

Irrigation of bearing trees has materially improved fruit development and increased young tree growth. Trees probably need at least 4 inches of water per month, from soil storage, rainfall or irrigation, for maximum growth. Applications should be made before moisture stress becomes excessive, 1 to 2 in. every 10 days is suggested.
Pruning is necessary to form a well-shaped strong tree, and to control fruit bearing. Trees are pruned to form an open center. One method calls for the tree to be cut back at planting to a single stem 2 ft. high. If laterals have formed on the nursery tree, cut lower laterals off flush with the stem, but allow stubs 1 to 2 in. long to remain on the upper ones. This is to insure leaving buds for new shoot development. After the tree sprouts in early spring, select 3 evenly spaced, vigorous, wide angled shoots to be the major scaffolding. Remove or cut back other shoots and remove all low growing suckers, including those from the rootstock.

In the first winter, cut back the main scaffold branches approximately 1/3, to a lateral branch growing on the outside of the main branches. Water sprouts and limbs growing too low to the ground should be removed. Trees should be kept growing low; this enables more of the fruit to be harvested from the ground in later years. Continue this training for the 2nd and 3rd winters. Trees that are bearing should not be pruned until January or February to avoid winter injury.

After the third winter, pruning consists of removing overcrowded branches and water sprouts, heading back terminal growth to prevent the tree from growing to excess heights, and keeping the center of tree open to allow sunlight to reach all parts of the tree.

Circular 299-D provides more details on growing peaches and cultivars for different areas of Florida.

GRASS vs PEANUT

Water is important to production and maintenance of most Florida turfgrasses. It is becoming a precious commodity as the demand by rapidly growing urban areas increase. In many municipalities, its use is restricted not only during the day but all year round. An estimated 50% or more of water consumed in urban areas is used for lawns and gardens. In general, most lawn grasses experience a rapid deterioration in health, vigor and appearance as a result of water deficiency during dry periods.

Perennial peanut or rhizoma peanut is being examined for its potential as a suitable alternative to turfgrass. It is indigenous to South America.

Perennial peanut has demonstrated its ability to persist with limited management in Florida's environment. A perennial peanut lawn maintained with fertilizers, pesticides or irrigation following establishment remained in good condition for the 6 consecutive years it was observed in Gainesville. It has persisted on highway medians for approximately 30 years, receiving only normal mowing. It can survive low temperatures and dry conditions because of its rhizome system.

The peanut is a legume and requires no applied nitrogen fertilizer due to its association with nitrogen fixing rhizobium bacteria. This warrants a closer examination as an alternative lawn cover/turf.

The objective of this study was to compare the performance of the perennial peanut to St. Augustinegrass under varying levels of imposed soil moisture. The experiment conducted in Bartow, was designed using a randomized complete block with four replications. The area consisted of 48 plots. Treatments consisted of a control (rain fed) and three soil moisture levels that were maintained.

Water use was metered for each plot. Two low stature perennials peanut genotypes, identified as "Arblick" and "Ecoturf", along with St. Augustinegrass were tested. Appropriate plots
were planted with peanut rhizomes or grass sod during the last half of February, 1991. Plots were
maintained at 3 cm. mowing height. An intermediate management program was used for the grass.
Fusilade was applied in the first year to control bermudagrass in perennial peanut.

A color rating and plant stress rating scale were used. Stress ratings were taken during mid-
afternoon under no-to-minimal cloud cover which corresponds to the time period of greatest stress.

The use of color and wilt scores and corresponding gallons of water applied during rain-free
periods within each month were needed to provide an enhanced view of the stress effect being rated
in each of the 4 imposed moisture regimes.

Turf color rating for "Arblick" and "Ecoturf" were consistently higher under water stress
conditions compared to St. Augustinegrass. Low levels of applied water resulted in die-back of St.
Augustinegrass with no long-term impact on the perennial peanut turf.

Perennial peanut utilizes water, when it is available, for growth and storage. When soil
water isn't available, the plant maintains itself by conserving moisture, drawing from its stored
reservoir, and accessing moisture from deep within the soil profile. The extensive root/rhizome
system mines a large volume of soil for moisture during dry periods. In contrast, St. Augustinegrass
mines a relatively smaller volume of soil with it comparatively shallow root system.

Perennial peanut was able to attain higher wilt scores with less applied water compared to
St. Augustinegrass. The disparity between wilt scores for the two species at any given level of applied
water was greater during May, 1994; however, these differences between the two decreased
substantially with increased rainfall in June.

Less water was required by "Arblick" and "Ecoturf" compared to St. Augustinegrass to
maintain a comparable water stress or wilt score level. Non-irrigated perennial peanut consistently
maintained superior wilt and color scores compared to St. Augustinegrass. Perennial peanut
persisted in a healthy condition without insect control, irrigation, or applied nitrogen. Applications of
chinch bug control, irrigation and nitrogen fertilizer were required to maintain a healthy St.
Augustinegrass turf. Results of the research has demonstrated that perennial peanut has
considerable potential as a low-maintenance lawn cover. NOTE: Perennial peanut is growing well
along John Young Pkwy. at Carroll St. and Donegan and at the Agriculture Center. SOURCE:

SEEKING THE UNUSUAL?

Here are some possibilities that may interest vegetable gardeners.

GOURDS: A mixed package of seed will yield a wide variety of shapes and colors. Gourds
are related to squash, so grow them as summer squash. Let them climb on anything that's available,
on a trellis or down a bank. As the flower fades, watch the gourd develop and speculate on its size,
shape and color. They will ripen and color faster if some of the lush foliage is stripped away to let the
sun get to them. They are ready to harvest when they feel firm under pressure, with the skin
reasonably hard and the stems begin to shrivel and dry. Large gourds take longer to mature than the
small fruited mixtures. Store in a cool dry place to season for a few weeks. Apply several coats of
floor wax and they will keep for a month or more without molding.

POPCORN: Popcorn is grown the same as the regular sweet corn. The difference is the end
product and harvesting. Popcorn ears are much smaller than sweet corn, usually 4 to 5 inches long
and quite plump in appearance. Let them fully mature, then cut the stalks and put them where they can dry. After shucking the ears, store kernels in a dry place. The hybrid popcorns expand in size 24 times when popped, and are exceptionally tender.

PEANUTS: Growing goobers can be fun. Areas with 4 months of warm summer weather is ideal. They like poor soil that is on the sandy-loamy side but can't take an acid soil. The peanut is a sprawling plant with many branched stems. Its growing habit is curious and interesting: after the tiny female flower opens, the ovaries drop to the ground where they bury themselves. The peanut then begins to form underground. Full maturity may be reached in late summer or early fall. SOURCE: Vegetable Gardening,a Sunset Book

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LISIANTHUS

The lisianthus is back! This native American flower journeyed to Japan in the early 1900's and back to the U. S. again in 1982. Since then, Brent Harbaugh, a University of Florida researcher, and his colleagues have been working to develop a heat tolerant lisianthus for production in Florida.

With the release of the Maurine series in 1995, they began to see the results of their research.

The flower, native to Texas and Colorado, shows up in seed catalogs as early as 1887. In the early 1900's, Japanese breeders took the flower back to Japan. They adopted the flower and began an active breeding program. From the flowers original blue and purple, the breeders developed pink and white blossoms. The Japanese introduced it into the U. S. as a cut flower in 1982.

Harbaugh, a production horticulturist, took up the cause of the lisianthus, trying to develop it as a new ornamental. He found out early that Florida's high temperatures might be a problem. Even though it was touted as a crop that could take high heat, it still needed some winter chill. Without the chill, and at 75 degree temperatures, the flower would go into a biennial cycle of blooming (blooming and dying the second year).

In studies, he found a small percentage of lisianthus that actually didn't enter the biennial cycle, and in 1985 began working with geneticists Jay Scott to breed the heat tolerance into other varieties.

Ten years later the heat-tolerant Maurine Blue series was released. The potted plant caught the eye of consumers--its colors ranging from dark blue to pure white, with lilac and pink in between. For gardeners, Florida Blue, was also released that year.

More choices came in 1997, with release of 6 more colors in the Maurine series and in 1998 with a light blue and pink in the Florida series.

The decade-plus research effort paid off for the industry. The company licensed to produce the Maurine series sold 500,000 plugs in 1998 and the plant is just beginning to meet its potential.

Heat tolerance has been the first step with lisianthus but is by no means the end. Harbaugh and his colleagues are working on breeding disease resistance into the plant and fine-tuning the plant's requirements for temperature, nutrition, soil and lighting. All work done prior to 1982 was done in Japan's cooler climate, there is plenty of research left for adapting lisianthus to Florida.
The latest twist in the lisianthus story is perhaps the most ironic of all. The seed company licensed to sell the Florida Blue series has stepped up marketing of the semidwarf bedding variety and has identified the key market: Japan. Source: IMPACT, VOL. 14, NO.3, WINTER, 1999

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HAVE A VERY HAPPY HOLIDAY SEASON!