Summer 2015

MIAMI GREEN BYTES

A Newsletter for local gardeners, arborists, and landscapers from the UF-IFAS/Miami-Dade County Extension Office.

.

By the end of May all four of the main weather stations in South Florida had recorded the warmest spring on record. A severe drought exists in parts of Miami-Dade County with the Redland having experienced its second driest spring on record. Rainfall was 4.8" below normal which added to the rain deficit experienced for April and March. El niño conditions became established in the Pacific Ocean and there is a 90% certainty of it continuing through fall and possibly strengthen. In large part this accounts for the forecast of fewer than 10 named storms for the present hurricane season. Even so we need to be prepared: use this link for new text and graphical products from the National Hurricane Center including illustrations showing the extent of areas under potential threat from storm surge.

One important area where we need to prepare is taking pro-active measures to protect landscapes from storm damage.

Preparing trees for hurricane season

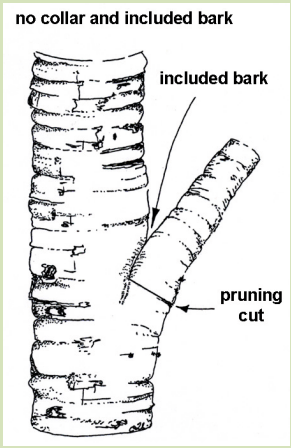
Storm preparedness begins with choosing good quality trees ("Florida Fancy" or "Grade #1" - these have a single trunk and need little additional training to form a structurally sound tree), correct installation and formative pruning (as required)

- **Choose trees that are appropriate for the site.** Large trees need a large rooting zone. Tree roots extend 3 – 5 times the diameter of the canopy. **As shown below at right** insufficient soil volume increases the risk of trees toppling. If the planting area is restricted or the yard is small, choose a tree species that naturally stays small, and preferably slow growing. Know the mature height

In this issue you'll find:

and width of the tree, and take this into account when choosing the planting site. Where a deep, well developed root system is unlikely to develop (e.g., on exposed Miami limestone which favors surface roots) choose trees that mature at a height under 40'. Small trees are also indicated if the water table is within 2' of the soil surface.

The planting hole should be at least 1½x the width of the root ball and about 10% less than the depth, and the tree placed such that the top of the root ball is no more than be 1-3" above but never below grade. Shearing off the very outermost portion of the root ball promotes more rapid growth of roots into the surrounding soil. Any circling roots should be removed as in time these will compromise the tree's stability (**see below for more detailed information**). Where possible use what was excavated from the planting hole as backfill, ensuring that the base of the trunk (root flare) is not covered with either soil or mulch.



On limestone root expansion from the planting hole, and ultimately stability of the tree is improved by digging 4-6 equally spaced trenches radiating from the edge of the planting hole. Each trench should be filled with the soil you removed plus some organic matter (e.g.,15 % compost). If you cannot replace all the rubble you removed make up the volume with a mixture of coarse sand, Canadian peat and small aggregate. Trenching is especially important when installing large field grown trees on limestone.

•**Formative pruning** (if needed) can strengthen a tree and is best performed while young. Not only are the branches easier to reach, but the resulting wounds will be much smaller and callus over more rapidly. Pay particular attention to removing branches that form a tight crotch angle or where there are signs of included bark – these will develop weak attachment and readily separate from the tree during a storm.

•**Never allow trees to grow with multiple upright leaders**. These trees may look striking when young but will become hazardous as they grow older. Always prune so that branches are spaced 18-36" apart along the main trunk, with the main branches forming at least a 40° angle of attachment. Upright branches (i.e., with a narrow angle of attachment to the trunk) are highly prone to split from the trunk during a storm.

•**Reduce wind resistance, as shown at left**, by thinning trees with a thick canopy (i.e., hard to see through), removing no more than 25% of the canopy per year. This entails pruning back smaller branches, found mostly at the outer part of the canopy, which permits freer passage of wind and allows sunlight to penetrate further into the tree. Larger branches, especially those that are poorly attached should be shortened to lessen the strain on their

point of attachment. For most trees, it isn't necessary to thin them each year.

CAUTION: Using wound dressings or pruning paint is not necessary; it doesn't prevent wood decay. Only properly executed pruning cuts will prevent disease and wood rot

When pruning a tree avoid the following common mistakes

•**Large limbs should not be removed** unless they are obstructing traffic, pedestrians, or are hazardous. Avoid removing branches that are more than 2" in diameter – consider instead shortening back to a branch point. The larger the pruning wound, the slower it will callus over and "seal". An open wound is an avenue for disease and insect infestation.

•**Never cut a branch flush with the trunk.** That is, never make a flush cut (as shown at right). Always cut to the outside of the branch collar, located at the base of every branch. This collar is sometimes easily seen as a swelling where the branch meets the trunk (**photo at left shows collar and where to cut**). When pruning in this manner it may appear as though a small stub is left on the trunk. However, properly done, this technique removes the entire branch and does not injure the trunk.

•**Avoid "liontailing" / "overlifting"**, which refer to removing side branches from a large branch leaving only those at the distal end, **resulting in limbs that resemble a lion's tail (shown at left).** This harmful practice results in top heavy limbs that are more vulnerable to wind damage and rot. The common rule is that the lower half of the canopy should contain 2/3 of the foliage and branches.

•**Topping ('hatracking')** a tree is illegal and potentially dangerous Notice the large pruning wounds **(see photo to right)** which provide extensive cut surfaces by which decay organisms can gain entry. This can lead to internal rot and places the tree at much greater risk of failing in a storm. The sprouts which grow in response to topping are not well secured to the topped branch and they can easily split from the tree as they grow larger. To avoid this, always prune a branch back to a living branch crotch.

•**Tree roots should not be damaged.** Root pruning and digging around tree roots makes the tree more likely to fall during a storm. If you have to cut tree roots because of the potential to do damage, don't go any closer than 5x the trunk diameter, realizing that on Miami limestone tree are not deep-rooted. In addition, pruned roots are at

increased risk of root system disease. Do not remove aerial (prop) roots from *Ficus* trees as this renders them unstable during a windstorm.

Palms don't need hurricane pruning. Palms are adapted to wind storms. Removing fronds is of no benefit and is detrimental to the palm. Even dying leaves benefit the health of the palm and should not be removed until completely brown. Only coconuts and large palm seeds should be removed during hurricane season. Palms that develop pencil point trunks (shown at left, usually as a result of a nutritional deficiency) are at more risk of wind storm damage especially if over pruned.

I'd like to tell all about … … …

This is an opportunity for staff of the Miami-Dade Extension Office to provide a personal view of a plant they love (or hate!), from ornamentals to fruits and vegetables, South Florida natives to exotics.

On this occasion *Teresa Olczyk,* Director of the Miami-Dade Extension Office describes why oncidiums are her favorite orchid.

The Oncidiums are a neotropical genus of epiphytic, lithophytic or terrestrial orchids in the tribe Cymbidieae, sub tribe Oncidiinae. They are commonly known as 'dancing ladies' due to the appearance of the flowers.

***Oncidium* orchids exhibit sympodial growth** developing rhizomes that vary from short to long with the base enveloped in papery bracts; pseudobulbs too range in size from large and conspicuous to minute. Each pseudobulb develops 1-4 fleshy, leathery or soft leaves with clasping, overlapping bases – species with softer leaves often initially have four, two at the pseudobulb apex and two sheathing the base. The latter leaves are lost by the end of the first season.

Oncidum auriferum

The inflorescence is a raceme or panicle, often branched and elongated, from erect to pendent, with few to many flowers mainly yellow and/or shades of brown (e.g., *O. auriferum* shown at left) but other colors are found in hybrids such as *O.* 'Passionata Red Galaxy' shown at right and *O.* 'Spicy Pink' below

***Oncidium* Passionata Red Galaxy**

There are more than 430 species plus many intergenic hybrids involving taxonomically allied genera such as *Brassia*, *Aspasia*, *Miltonia*, *Leochilus* and others, which make oncidiums the third most cultivated group of orchids after catleyas and dendrobiums. The

hybrid *Oncidium* 'Sharry Baby' is often cited as the all-time most popular hybrid orchid not least because of its pervasive chocolate fragrance.

Oncidiums are found growing from hot tropical lowlands to high in the Andes. The latter are sometimes referred to as **cool section oncidiums** and include orchids (both hybrids and species) formerly classed as *Odontoglossum* (tiger orchids). Cool oncidiums require temperatures ranging from the low 50's F during winter (night) to day time temperatures no higher than the low 70's F during summer. These are ideal houseplants for cooler latitudes than Miami and are sometimes commercially referred to as cambria orchids.

O. 'Spicy Pink' (Top) and O. 'Sharry Baby' (Bottom)

In Miami-Dade, warm section oncidiums grow well; they require **exposure to bright light** but never full sun. They will withstand **temperature ranging from** a low (overnight) during winter of 55^{0}F and a day time high (summer) of 95^{0}F – at temperatures this high humidity needs to be elevated and the atmosphere buoyant (slight breeze). Where relative humidity falls below 30% (winter/spring) place containers on a tray containing small pebbles and filled with water.

Growing medium includes any of the materials commonly used for orchids including fir bark, sphagnum moss, peat moss, coir, larva rock etc. Just be sure it is free-draining – remains moist not wet. Alternatively attach the orchid to a rough-barked tree.

When watering oncidiums thoroughly drench the growing medium then allow it to dry out halfway. On cooler days in winter water less often.

During periods of active growth use a liquid orchid fertilizer. This can be included when watering (e.g., every other application if using a 10-10-10 fertilizer).

Oncidiums resent root disturbance and should only be re-potted when the growing medium breaks down or the container is too small to accommodate new growth. They produce new pseudobulbs from the bases of the existing ones. When repotting, provide sufficient space to permit the plant to increase its diameter by two or three new pseudobulbs – so that they will not hang over the edge of the container. There should also be sufficient depth, enough for roots to grow down into the growing medium. Spring is a good time to re-pot when the plant is actively growing

Problems Compared to other orchids oncidiums are considered to be pest free with no particular insect or disease problems to which they are prone. Wrinkled pseudobulbs generally indicate a lack of water; black rotten roots are a sign of overwatering; reddish green leaves indicate too much light and dark green, too little light.

To sum up - Looking at an *Oncidium* inflorescence I imagine hundreds of flamenco dancers dancing in bright sunlight. Quite a performance so full of fun, it makes me smile; here's a plant that exudes a feeling of optimism. Not only do oncidiums provide stunning long lived blooms, they're also super easy to grow. For any budding orchidist they are wonderful choices.

Removing Circling Tree Roots

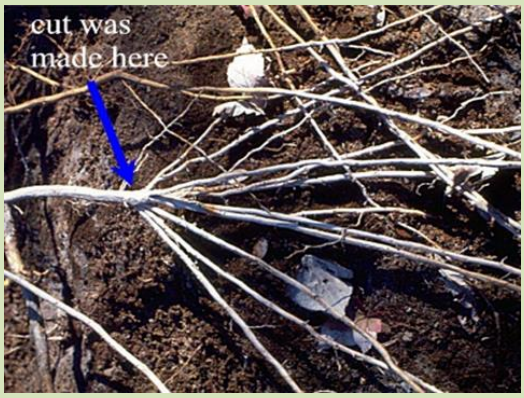
Hurricane season started on June 1st. Are you sure the trees you planted are in good shape? How does the root system appear? Can you see the root flare and the top-most root (first big root)? Is the planting site large enough to sustain future tree growth? The answers to these basic questions are the key to a tree's long term permanency and sustainability. Trees with roots that are touching or circling the trunk (photo at right), instead of growing straight and away from the trunk (photo at left), stress the tree by reducing or eliminating vascular flow where the root compresses the trunk. The anchorage capacity of the roots, very important during a wind storm, is also compromised (as shown in photo below right).

Stress increases with time and can lead to dead spots on the trunk and tree decline. For a minor root defect nothing needs to be done; but when circling and trunk girdling roots are present, dead patches will develop on the trunk. The tree could die if the defect is serious.

Certain species such as magnolia, maple, hollies, mahogany, black olive and others appear especially sensitive to circling or stem girdling roots; however, any tree can be affected by this defect. Careful evaluation of the situation will be required to determine if root severing will be of long term benefit to the tree compared to the stress of cutting the root. The stress from root removal will be relatively short lived and **decrease** with time as the tree recovers. Leaving the root defect in place can **increase** stress with time. If the cambium has not been permanently damaged at the point where the root impacts the trunk, normal vascular flow could return following root removal.

Post removal irrigation management is likely to reduce stress and help the tree recover. When evaluating whether the stress induced by removing the defect is a viable option, it has proved beneficial in instances where less than about 30% of the root system was removed. Some arborists routinely remove roots that might be as large as one-quarter of the trunk diameter, or even larger

When removing roots that circle or impact the trunk or cross over main roots, first carefully remove soil from around the base of the trunk in order to reveal the root flare. Proceed to then cleanly cut back circling root(s) to a lateral root where practical. Cut roots at the point where they begin to circle so new roots that grow from the cut will point away from the trunk. New roots will grow more-or-less parallel to the direction of the root section just behind the cut (as shown at left).



Follow these simple steps and you will enjoy the shade for many years!

Biohazards when working in the yard: contagious diseases

The last issue of this newsletter introduced the topic of biohazards in the yard with a consideration of the potential risk of contact dermatitis (skin irritation) posed by plants found in local landscapes. The present article continues the theme of biohazards, this time focusing on infectious diseases associated with work outdoors. While everyone should take reasonable precautions, persons most at risk are those with a compromised immune system (who should first seek advice from a health professional) and young children (who should be under appropriate supervision).

The types of pathogens that could be encountered are summarized in the text box at left. It will be seen that most are associated with soil that has been contaminated with animal/bird feces. Viruses found in animal waste are not usually infective to humans though bird flu is one important exception. Locally when outdoors viral diseases of most concern are those vectored by mosquitoes including St Louis encephalitis, West Nile Virus, dengue fever and most recently chicungunya which is of special concern given its rapid spread throughout the Caribbean basin. In exceptional circumstances where soil becomes contaminated with sewage (after inundation during a tropical storm), enteric viruses in human waste could remain viable for several days.

Potential exposure to four types of pathogens when working outdoors:

Bacteria – differ from animal cells in not having DNA compartmentalized in a nucleus, and possessing a rigid outer cell envelope (important role in determining virulence). Some soil bacteria form extremely resilient spores; many of those causing gastro- intestinal diseases can be destroyed by heat, of importance when making compost. The vast majority of bacteria are harmless and essential to life on earth.

Protozoa – unicellular like bacteria but like animal cells possess a distinct nucleus. Of 66.000 known species 10.000 are parasites (e.g., malaria and amebic dysentery) as well diseases in cattle (babesiosis), insects (*Nosema*, used in Nolo bait for grass- hoppers, *Ophryocystis* a parasite of monarch butterflies). For present purposes species of concern are found in animal feces as resilient cysts that contaminate soil.

Roundworms – Nematode parasites of both animal and human origin often with one or more intermediate hosts. In the yard soil can be contaminated with eggs or larvae voided with animal feces or spread in manure or compost.

Fungi - disease risk increased where soil is near bird roosting sites and contains large amounts of ageing bird droppings especially pigeons, grackles and blackbirds. Infection from puncture wounds from plants or inhalation of spores.

Principal sources of infection:

Soil - as indicated above, can be contaminated with pathogens found in animal waste, but there are also naturally occurring soil dwelling microbes capable of causing illness in humans. These include bacteria (clostridia as well as *Bacillus*, *Listeria* and *Legionella*), free living Protozoa (e.g. *Acanthamoeba spp*.) and fungi (causing mycetoma), are all documented as causes of illness in humans. Other fungal pathogens (e.g. *Histoplasma capsulatum* and *Blastomycoses dermatitidis)* have also been recovered from soil, but are associated with certain geographic areas (e.g., *Coccidioides*, southwestern US, alkaline, highly saline sandy soils). In general fungal diseases are of most concern for persons with a compromised immune system.

Animal waste – this involves both wild and domesticated animals, in the latter case often deliberately introduced to a site as manure (raw or improperly composted). Wild animals range from snakes and lizards (including iguanas), which are a known source of salmonella types pathogenic to humans, to rats and raccoons (intestinal parasites). Diseases spread from animals to humans are termed **zoonotic,** in contrast **to** passive transfer of pathogens from contaminated material (animal waste or a carcass) on body surfaces usually insects or birds in which case they act as a vector (e.g., fruit flies and gulls). Reducing the risk posed by animal waste obviously cannot be wholly eliminated but **one simple precaution is not to use manure.**

A definite risk when used raw it should never be used for home garden composting. It is unlikely that home composting units reach temperatures sufficient to destroy pathogens present in animal manure; for instance the highly virulent O157:H7 hemorrhagic strain of *Escherichia coli* requires 5 days at 140°F. In addition optimizing moisture content and C/N ratio (carbon:nitrogen) of the material being composted are also critically important in effectively eliminating microbes such as *E.coli* and *Salmonella*.

Home composting should be limited to yard trimmings and non-meat kitchen scraps (see below, 'Make your own compost'). Most Miami-Dade residents do not have access to animal manure so its use in local home composting is largely a redundant issue. If used at all the likeliest sources are probably horses or chickens.

Thoroughly washing your hands after gardening can help prevent exposure to parasitic diseases

Horse manure is relatively safe though there is some potential slight risk from two protozoan intestinal parasites *Giardia intestinalis* (see below) and *Cryptosporidium* an intestinal protozoan parasite found in a wide range of animals. The source of *Salmonella* Oranieburg that contaminated the soil of a vegetable garden in California was found to be raw horse manure used as fertilizer. *Rhodococcus equi* is a soil bacterium found in horse manure and is responsible for respiratory disease in foals; although still rare it is increasingly found as the cause of a severe form of pneumonia in persons with a compromised immune system, in particular those infected with HIV. In using horse manure avoid any from foals or animals that are obviously sick.

Poultry manure/liter commonly contains *Campylobacter jejuni* part of the normal gut flora of many animals and birds, but Salmonella is the most widely found pathogen; *E.coli* is also present but not the virulent O157:H7 strain. In humans *Campylobacter* causes mild enteritis to severe dysentery; more serious is the association of *Campylobacter* infection with up to 30% of all cases of Guillain-Barré syndrome, a comparatively rare but severe neurological disorder that involves the peripheral nervous system.

Year round contamination of soil from dog and cat feces, in particular feral animals, is of more concern in spreading several parasites that can infect humans. With the recognition of several different genetic sub groups of *Giardia* each differing in their spectrum of animal hosts, dogs and cats are of probable minor importance as a potential source of human infection. There are several other parasites that cats and dogs can spread, but simple proactive steps based on knowledge of the parasites life cycle can lessen the risk.

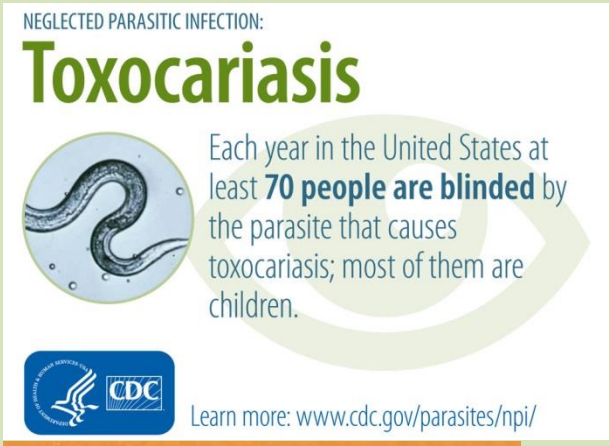
Toxoplasma is a common protozoan parasite found in the small intestine of cats, the sole definitive host. Each infected cat will shed the parasite (as millions of resilient oocysts) only once, and for a period of no more than 3 weeks. Thereafter the cat is immune for life. Several mammals including man can act as intermediate hosts if they ingest oocysts. The parasite is then released from the oocysts and migrates throughout the body and eventually forms tissue cysts in a variety of organs, especially nerve and muscle. While most human infections are the result of consuming tissue cysts in undercooked meat, soil contaminated with oocysts from cat feces is recognized as an increasing risk.

In most instances infection is symptomless or at most flu like; there are two important exceptions, toxoplasmic encephalitis in HIV infected persons who are not receiving medication and pregnant women. In the latter instance there can be miscarriage of the fetus, but more likely are developmental problems including blindness after birth. Between 30-50% of the world population has latent toxoplasmosis making it the the world's most prevalent infection (in the US 11% test positive for toxoplasma, but near

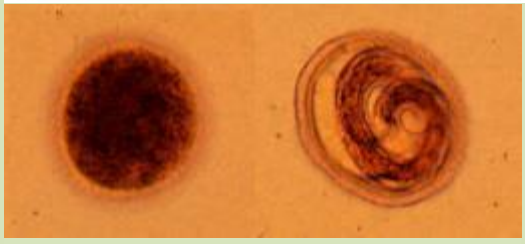
50% for some European countries). There is increasing evidence pointing to latent toxoplasmosis as a factor in expression of other diseases, most intriguingly behavioral disorders, and schizophrenia.

Cats kept indoors and fed cooked meat products (and where there is no access to prey animals such as mice), are at minimal risk for contracting *Toxoplasma*. Contamination of soil is due to young, outdoor cats and one precaution to take if you have a children's sand box in the yard is to keep it covered; never use the sand or spent cat litter as soil amendments. Toxoplasma oocysts once shed take 5 days to become infective and thereafter can remain viable in soil for at least a year. Bearing this in mind, prompt removal of cat feces from the yard can prevent prolonged contamination of the soil.

Dog and cat feces are also the source of two roundworm parasites. **Hookworms** are small thread like worms that attach to mucosa of the small intestine where they remove blood and tissue fluids. Infection occurs when larval worms in soil burrow through the skin and migrate to the small intestine. When humans are infected with animal (zoonotic) hookworms as opposed to human hookworms, the parasite penetrates the skin but fails to migrate to the small intestine. Instead the larval worms meander just under the skin surface resulting in serpentine tracks and intense itching, a condition known as cutaneous larva migrans (**CLM**) Most often involved are *Ancylostoma braziliense* and to a lesser extent *A. canium* . On a rare occasion a very few *A. canium* migrate to the gut lumen; although no patent infection results, a painful disorder of the gut, eosinophilic enteritis can develop.



It takes 3-7 days for infective larvae to develop from eggs, so prompt removal of animal waste is most important. Hookworm larvae can remain infective for 3-4 weeks in moist sandy soil, but are rapidly killed on exposure to direct sunlight. If you know your yard is frequented by dogs and cats it is also advisable to wear shoes, and if sitting on the ground spread a plastic sheet to prevent bare skin contacting soil.



***Toxacara* eggs: left non-embryonated; right containing 1st stage larva**

Potentially more serious, visceral larva migrans (VLM) is caused by ***Toxacara canis*** another **roundworm of dogs** (*T. cati* found in cats is encountered less often). Parasite eggs are shed in the animal's feces and can survive in moist soil for up to 4 years (they are also resistant to most household disinfectants). When ingested by the animal host the eggs hatch and larval worms penetrate the gut wall migrate via the lung back to the gut as adult worms (in adult dogs the infection becomes latent). When ingested by humans larval worms never complete their migratory phase and become localized in a variety of organs including the heart, lungs, liver and kidney, and more seriously the eyes. Almost 14% of the US population test positive for exposure to Toxacara; in most instances symptoms are absent or mild especially for adults, but for children it can be more serious especially if larvae become located in the eye with subsequent loss of vision.

Control of *Toxacara* again involves prompt removal of animal waste; it takes 2 – 3 weeks for *Toxacara* eggs to become embryonated (infective) after being voided by the host animal. The principal sources of infection are puppies (infected in utero) and lactating adult dogs so de-worming pups can help. Cats can also be de-wormed. In either instance consult a veterinarian as to an appropriate program of

medications to control both roundworms and hookworms. That leaves stray dogs and feral cats as the remaining sources of soil contamination. There are no chemical sprays that can be used - neither eggs nor infective larvae can be controlled using lawn pesticides.

Potting soils and soil amendments are potential sources of both bacterial and fungal infection. Since the early 1990's when an outbreak of legionnaires disease in Australia was traced to handling potting soils, the bacteria responsible **(*Legionella* spp., in particular *L. longbeachae***) have also been found in compost, and potting soils in Europe and the USA and linked to disease outbreaks. There is circumstantial evidence that potting mixes based on composted sawdust and bark compared to those containing a high proportion of peat are more likely to support *Legionella* growth. *Legionella* have also been detected after large scale composting of green waste and are protected from elevated temperatures during curing by surviving within encysted free living amoeba. Legionella is contracted through bio-aerosols so a mask is advisable when working with potting mixes, and on rare instances infection has been via breaks in the skin. **Aerosolized potting soils have also been found to contain a range of mycobacteria**, and were suspected of being responsible for non-tubercula respiratory disease symptom in a group of elderly gardeners. This prompted a recommendation to wear masks when working with potting soils; mycobacteria are commonly found in potting soil and are associated with sphagnum moss based products such as peat which are a widely used component of soil mixes.

Sphagnum moss has also been implicated in infections due the saprophytic fungus ***Sporothrix schenkii*** found in soil and on plant surfaces especially in tropical and sub-tropical climates. Infection occurs via breaks in the skin and after several days to weeks a small bump forms and develops into a nodule which may ulcerate. Symptoms at this stage have been mistaken for a spider bite (brown recluse which is not found in Florida) but subsequently further nodules appear as the infection is spread via the lymphatic system. In immunocompromised individuals such as those infected with HIV virus, sporotrichosis can become systemic spreading to bones central nervous system and lungs.

Skin nodules due to *Sporothrix schecnkii*

Infection is not common and in the US is most likely in gardeners and those working in agriculture or horticulture, especially if it involves handling sphagnum moss and/or there is a risk of puncture wounds (plants with prickles such as roses). Sporotrichosis has in the past been referred to as alcoholic rose growers disease (due to cases that involved middle-aged, white rose growers with an alcohol problem). When working with sphagnum moss based products, wear gloves and a long sleeved shirt or blouse and if handling plants with prickles or spines a pair of rose-growers gloves (which protect hands and the forearm). Opportunistic infections involving other fungi including those familiar as plant pathogens such as *Fusarium*, *Alternaria*, *Bipolaris*, *Phomopsis* and *Rhizoctonia* have been recorded and their frequency is expected to increase with the growing population of immunocompromised individuals.

Precautions are simple and bear repeating: dress appropriately when working outdoors wearing gloves, long sleeved shirt and long pants as well as a mask to protect from bio-aerosols, pay attention to sanitation, promptly removing dog and cat feces where possible **and don't forget to wash your hands**.

Fasciation: the weird but intriguing world of aberrant plant growth.

Queries about the highly unusually appearance exhibited by the plant shown at right were the stimulus for this short introduction to weird world of plant fasciation. The term fasciation is derived from the Latin *fascia*, which means a band, a flat piece of material. Although not a common occurrence, fasciation has been found in a broad range of plants (more than 100 plant families), and is especially common in the Fabaceae, Asteraceae, Rosaceae and succulents (Crassulaceae, Cactaceae and Euphorbaceae).

Fasciated growth results from mutation of a single cell in the apical meristem (growing point) of a stem which divides to produce a grossly flattened rather than normal, basically cylindrical, new growth. Such stems often appear fan shaped forming a crest, and are then referred to as cristate. The term *forma cristata* is added after the taxonomic name of plant's exhibiting this feature .

Fasciation can affect not only vegetative stems but also those of flowering stems (as shown at left for firespike *Odontonema strictum* a locally popular shrub) and can involve just a specific part or to the whole plant. In the latter instance such plants may be referred to as monstrous; the more extensive the fasciation the more unrecognizable the plant becomes. In some instances the stems become ribbon like and fluted giving the impression they're composed of numerous thin stems that are fused to one another.

Mammillaria geminispina 'Cristata'

While there are a variety of known triggers that can initiate fasciation the exact mechanism is little understood. Possible triggers include extremes of temperature, insect feeding (possibly as vectors of an unidentified microbe), chemical exposure (colchicine a mutagen), mechanical damage and infectious agents (bacteria, viruses and phytoplasmas). More often there is no apparent trigger though in the case of phytoplasmas, now considered the most likely infectious agent, they are difficult to detect. A single recessive gene controls fasciation in some plants (e.g., cucumbers and soya beans). Due to incomplete penetrance of the gene the degree to which it the trait is expressed would be expected to be highly variable. Two genes have been found that when mutated cause fasciation; the trait could then be inherited or it may not

be sufficiently stable to be fully expressed. External factors, such as those referred to above, are still likely of paramount importance in determining the extent to which the trait is expressed

While often considered a defect, when the aberrant growth can be pruned out, some fasciated plants are commercially valuable and this is especially true of succulents. Succulents especially cacti, euphorbs and some aloes are more genetically predisposed to produce fasciated stems though why is not fully understood. In cacti it has been observed in more than 30 genera from the large Sagaura cactus to smaller globose cacti such as *Mammillaria* shown above where it has developed many convoluted ridges and resembles a brain. Cristate forms of these smaller cacti are items for collectors as are some of the euphorbs in particular *Euphorbia lactea* (milk stripe euphorbia) This is one of the most widely grown of the large cactus-like euphorbs reaching a height of up to 12'. Unusual dwarf forms with flattened stems that develop frilled, crescent shaped ridges, (cristate forms, *E. lactea* 'Cristata') slowly grow to resemble pieces of coral. Introductions from Thailand have crests in various colors, ruby, pink, purple, orange and yellow among others. Color is improved with some shade from hot afternoon sun. Note in the two photos above at right growth of the cristate form bears no resemblance to the normal non-fasciated plant.

Other fasciated plants are also of commercial value, most notably the "cockscomb" cultivars of *Celosia argentea* with their fasciated inflorescence (shown below at right).

In most instances propagation of fasciated plants involves the use of cuttings ; in some instances where rooting is difficult the cutting is grafted (some cacti and euphorbs). In a few instances where the condition is inherited, rather than occurring as a chance mutation of meristematic cells, seeds can be used as in the crested forms of *Celosia*.

As for the fasciated plant that instigated the present interest – it was not identified though an agave would seem a reasonable guesss.

Make Your Own Compost

It's easier than you think! You will be helping to reduce waste from going into landfills and produce a wonderful product for your plants. When done correctly, compost is not smelly, and does not attract unwanted wildlife & pests. While you could invest in purchasing a composter it's easy enough to start simple with the directions given below.

Composting is the decomposition of organic waste such as food or plant material by microbes (bacteria and fungi), earthworms and other organisms. The end result of composting is dark brown crumbly decayed organic matter called compost. Often it is incorrectly termed humus, a term that is used to describe the black, colloidal, organic material found in soil that is resistant to decay. Compost when added to soil will decay further and over time will form humus, which in turn will over time, improve soil structure.

Decomposers are not much different from people in terms of their basic needs, so be sure to provide your microbes with all of the basics:

- **Food:** Carbon and Nitrogen (Browns & Greens)
- **Water:** Moist, not soggy
- **Air:** Oxygen (not enough and the pile is more likely to develop an offensive odor)
- **Volume of pile:** 3' long x 3' high x 3' deep or 3-5 foot diameter by 3 feet high cylinder
- **Particle Size:** Less than 2-3 inches

What can I compost? Anything that was growing as a plant. All plant materials contain nitrogen and carbon. Materials high in nitrogen are called "greens" (grass clippings, green leaves, fruit & vegetable kitchen scraps, coffee grounds, and tea bags). Materials high in carbon are called "browns" (brown leaves, paper coffee filters, stale cereals & rice, crushed egg shells, newspaper, and chipped tree branches). To speed up the process, before adding materials to the compost bin, chip or shred items so they are no more than 2-3" long.

The compost will heat up due to microbial activity and will settle as the materials decompose. To speed up the process, "turn" the compost periodically (weekly or so). Turning means mixing the compost or taking everything out of the bin and then putting it back. The compost is finished and ready to use when it has a uniform look, dark color, small particle size, and an "earthy" odor. Use finished compost as a slow-release fertilizer, soil amendment, in your potting soil and raised bed vegetable garden.

To learn more about how to compost, we are offering classes throughout the year. Please check our web site calendar for up-coming offerings. We also have a web page where you can learn more about making your own "black gold".

Pest Updates

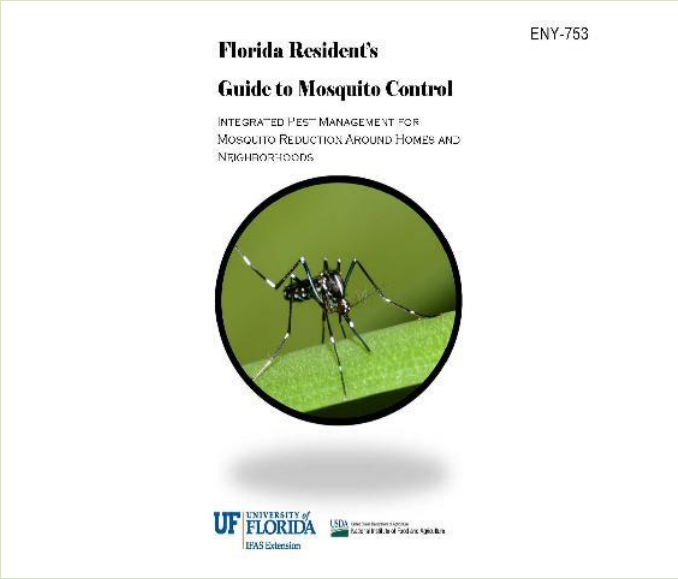
Timely information regarding pests affecting Miami-Dade Gardens and landscapes

*__More than the usual number of residents__ have expressed concern over a 'fearsome' critter with a 'snake like head' which has been found chewing leaves on local citrus trees. Popularly known as an orange dog it can on occasion resemble a bird dropping but is in fact the caterpillar of a truly striking butterfly, the giant swallowtail *Papillo cresphontes*. The caterpillar is found on a variety of plants in the Rutaceae apart from citrus including the white sapote *Casimiora edulis*, and two trees native to South Florida wild lime *Zanthoxylum fagara* and torchwood *Amyris elemifera*. In most instances a citrus tree can easily withstand the amount of leaf damage, and no controls are warranted. In exceptional circumstances, for instances where a newly planted tree is experiencing extensive leaf loss, control may be warranted. For further information on giant swallowtail butterflies use the link provided.

* I__n a previous edition of this newsletter__ attention was drawn to the fiddlewood leafroller (*Epicorsia oedipodalis*) a rather drab pale yellow moth. The larvae of this moth are the cause of severe leaf-loss for the fiddlewood *Citharexylum spinosum*, a small quite attractive tree native to South Florida. A recent UF-IFAS publication provides further information on the moth and other less frequent host plants. You may be able to overlook the periodic loss of leaves if you are committed to using native plants otherwise consider other alternative small trees.

*__During May, leaves of the Cuban laurel__ *Ficus microcarpa* with symptoms identical to those due to the ficus gall wasp *Josephiella microcarpa* were brought to the Miami-Dade Extension Office. First identified in the US (mainland) in southern California in 1997, it was first seen in Florida during early 2007 in Collier County. Infested Cuban laurels have subsequently been recorded in various other parts of South Florida, including Palm Beach County but last month was the first time infested leaves were seen in the Miami-Dade Extension Office. Cuban laurel is the only host for the ficus gall wasp; it does not affect any other species of Ficus.

As can be seen at left, infested leaves develop blister like swellings; these then become distorted, turn yellow and drop. Heavy defoliation of Cuban laurel has been reported in Collier County, though in California it is not regarded as a serious pest. New growth is particularly susceptible to infestation so avoiding frequent pruning is one way to reducing the risk of leaves being damaged. In Miami-Dade *Ficus microcarpa* is currently prohibited from being used in local landscapes, though this does not apply to the pest-resistant, dwarf cultivars 'Green Island' and 'Green Mound' which should be



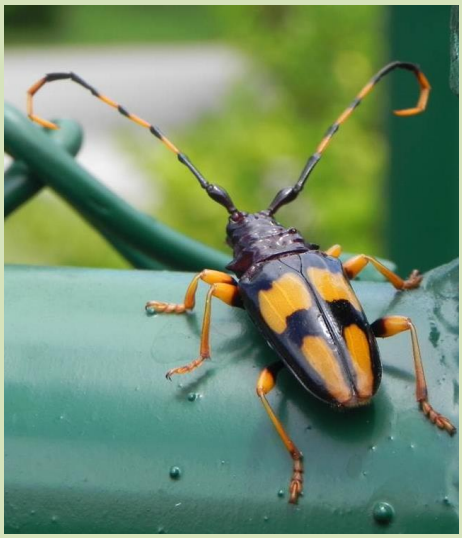
unaffected due to their slow rate of growth (both are resistant to damage from Cuban laurel thrips). The *Ficus* gall wasp should continue to be of limited importance in Miami-Dade landscapes.

*__Rainy season equals increasing mosquitoe woes.__ Although mosquitoes can breed year round in Miami-Dade (especially 'container' mosquitoes capable of spreading disease) their nuisance value in summer seriously interferes with outdoor activities. There are various ways in which mosquitoes can be controlled and the UF-IFAS guide to reducing mosquito populations in residential areas is aimed at homeowners and concentrates on mosquitoes that transmit disease. That includes not only humans, but animals such as dogs and horses.

*A recent UF-IFAS publication has drawn attention to a potentially serious disease affecting oak trees in Florida including live oaks. Known as bot canker it results in widespread branch die-back and is caused by two fungal pathogens *Diplodia cortica* and *Diplodia quercivola*. Clusters of large, dead branches dispersed indiscriminately within the tree canopy are a characteristic feature of infected trees, along with dead twigs which can be found throughout the tree. Disease is more likely in stressed trees and control is through sanitation, prompt disposal of infected limbs, and disinfection of tools used when pruning an infected tree. There are no fungicides available for controlling bot canker but there are some that can be used to protect pruning cuts.

*__With summer come pest, diseases and weeds__ that can affect the health and appearance of landscape plants and turf. Inevitably this can lead to the use of pesticides and whether man made or 'natural. All are chemicals and need to be used with due care and attention to label instructions. Always keep pesticides in their original containers and after use pay attention to the proper disposal of empty containers and unused pesticide. A special reminder when using herbicides – keep a spray can that is used solely for weed control. Even if you think a spray tank has been thoroughly rinsed out, it may not be sufficient as trace amounts of some herbicides can damage plants. The mamey leaf shown at left was sprayed with a trace element nutritional spray using a tank that had previously contained glyphosate.

*__The striking longhorn beetle__ shown below was photographed by a resident of Palmetto Bay and identified as the long-jawed longhorn beetle *Trachyderes mandibularis*. In Florida a resident population of these beetles has been established in the Lower Keys for many years, and more recently they were found in Manatee County though with morphologically distinct features. Elsewhere they are distributed more widely from southern Texas west to southern California and south into Honduras. The long-jawed



longhorn beetle was the subject of a past 'Pest Alert' from the Florida Department of Agriculture. Like other longhorn beetles it is a wood boring insect; however since it favors tree branches that are already dead it is of minor concern for healthy trees.

*A newly revised UF-IFAS publication provides information on Africanized bees. Formerly nuisance feral bee colonies had to be destroyed; they can now be removed live by registered bee keepers and licensed PCO's.

At this time of year…..

Some timely information for Miami-Dade landscapes and gardens

►**Palms are one landscape item that suffers in local landscapes** from inadequate or a lack of, regular applications of fertilizer; nutrient deficiencies can eventually kill a palm. A recent UF Extension publication explains why it is important to use a fertilizer that has been correctly formulated. It isn't just a matter of the elements being in the correct ratio but ensuring they are supplied in the an appropriate form using slow release sources for potassium (K), nitrogen (N), magnesium (Mg) and boron (B).

►**There have been enquiries concerning the use of olive trees** in Miami-Dade. A recent UF Extension publication reviews the use of olive trees in Florida and points out that while they may be suited to use as landscape trees, they would be unreliable at present as a source of olives. This would require a better understanding of the complexities of pollination under Florida conditions together with ensuring the varieties chosen will receive exposure to sufficient chilling in order to flower and set fruit. Day time temperatures during winter preclude fruit production in in Miami-Dade. If planting an olive tree as an ornamental in Miami-Dade it is essential to choose a site that does not flood and has free draining soil. Olive trees are adapted to grow in poor soils, including alkaline, limestone based soils such as those found in Miami-Dade.

► **Organic mulches are beneficial** in both preventing weeds and enriching soil as they slowly decompose. They also help conserve soil moisture but two points to remember: avoid piling mulch against tree trunks and don't spread it at thicker than 3". When too thick it can become saturated with water during rainy season and suffocate tree roots.

►**Wondering when to prune your fruit tree?** Right after harvest is the best time and if you are also wondering how to proceed then use the following link to some basic pruning tips. If you are attempting to cut back a large mango or avocado tree that involves climbing, that's a job for a certified arborist.

►**Although the rainy season is a good time to plant many landscape shrubs** in Miami-Dade, it's better to wait until late January-early February for roses. Although you will need to irrigate them, they will have time to become sufficiently established before facing the stress of summer humidity and rainfall. These are conditions that favor the spread of blackspot, the most serious disease faced by local rose growers. Unless you are growing roses with some resistance to blackspot, routine-spraying of your bushes with suitable fungicides will be required; otherwise they will likely be leafless by late summer.

► **It's rainy season so take advantage of the Miami-Dade Extension rain barrel program** to save water for the rainless days later in the year. Rain barrels are ideal for irrigating a raised bed vegetable or flower garden, container plants, especially those that require an acid pH, as well as orchids, hoyas and gesneriads. You can find more information about how to obtain a rain barrel and upcoming workshops by contacting Barbara McAdam

Please note that Miami-Dade Cooperative Extension does not sell rain barrels. Rain barrels are made available only to individuals who attend educational workshops.

►**For those with St Augustine turf, leaf spotting diseases** especially grey leaf spot (shown at right), are favored by the heat and humidity of summer. Newly laid, as compared to well established turf is particularly susceptible to gray leaf spot, as is turf where shade permits grass blades to remain wet for an extended period. Renovated lawns and those where too much nitrogen fertilizer are used are also more susceptible. Note the pale, grayish leaf spots plus brown leaf tips; before applying one of the recommended fungicides take note of suggestions as to how to manage turf to lessen the risk of disease.

►**Palms at this time of year** are at increased risk of damage from lightning and disease in the form of phytophthora bud rot. Lightning is more likely to strike tall palms such as royals and washingtonias. Suspect lightning where there is a sudden collapse of the canopy. As rainy season progresses bud rot becomes more of a threat, especially if palms are planted close together. The first sign is yellowing and wilting of new fronds followed by a lack of further growth, leaving an open crown with just an outer ring of older fronds.

Plant of the Month

Will return during September in the fall issue of Miami Green Bytes

Featured will be a look at shrubs native to Miami-Dade as a source of landscape

-

If you are wondering how else Miami-Dade Extension helps county residents call or use the internet links to our office shown below – there' s assistance with food preparation, nutrition, health and managing family finances, plus an active 4H youth development program. Boaters, anglers and those who care for our marine environment will find information and activities within the local Sea Grant program. Send any general comments concerning Miami Green Bytes to the editor and for a specific article contact the author using the e-mail links provided below.

Look for the fall issue of Miami Green Bytes during September 2015

The Miami-Dade County Extension Office, a division of Miami-Dade County Department of Regulatory and Economic Resources, is located at 18710 SW 288 Street, Homestead, FL 33030, and can be contacted at 305 248-3311 or by e-mail: dade@ifas.ufl.edu . Web site: http://miami-dade.ifas.ufl.edu/

Contact persons for the articles in this issue are : John McLaughlin Ph.D. and Henry Mayer M.S. (**Preparing trees for hurricane season**); Teresa Olczyk M.S. (**I'd like to tell all about … Oncidiums**); Henry Mayer M.S. (**Removing circling tree roots**); Adrian Hunsberger M..S. **(Make your own compost)**; Barbara McAdam (Miami-Dade **Extension rain barrel program**) and John McLaughlin Ph.D. (**remainder**)

Photo Credits: Preparing for hurricane season (**Henry Mayer and Dr. Ed Gilman, UF**); Oncidiums (**Wikipedia**); Removing circling tree roots (**Dr. Ed Gilman UF**) Washing your hands after gardening, Toxacariasis poster (**CDC**); *Toxacara* eggs (**DPDx-CDC**); Sporotrichosis nodules (**Wikimedia**); Fasciated firespike inflorescence (**Top Tropicals**); *Mammillaria gemnispina* 'Cristata' & *Euphorbia lactea*(**Wikipedia**); hands in compost (**Mantis**) Gray leaf spot (**University of Georgia**); and remainder **Barbara McAdam, Adrian Hunsberger & John McLaughlin**.