Issue: 19-17
October 15, 2019

THE PURDUE LANDSCAPE REPORT

In This Issue

Fall Tree Care Tips

(Lindsey Purcell, lapurcel@purdue.edu)

Early fall is the time to begin preparing trees for the winter and get them off to a good start in the following spring. Preventative maintenance and some good cultural practices in autumn boost trees' health and vigor during the winter and creates an encouraging growing environment in the spring. Here are 5 good tips for trees:

1. ***Scout for pruning issues.***
   It's advantageous to schedule pruning tasks after leaves have fallen. It's much easier to see the branch structure of trees and deciduous shrubs in order to perform good selective cuts. Look for those non-beneficial plant parts and remove them. These include any dead, broken and crossing branches which can be removed. Also, search out and remove those epicormics sprouts in the canopy and basal sprouts emerging from around the trunk and root collar. Refer to this pruning publication for more information.
2. ***Feeding for the future.***
   Typically, tree roots have produce more root growth during the fall. Root systems are important as storage organs or banks to reserve energy for later. These stores of starch will become active energy on demand in the spring when shoot growth, leafing and flowering occur. Fertilization during this time will maintain soil nutrient levels and increase root production, promoting new growth in the spring. Newly, established trees and those younger trees are especially responsive to supplemental feeding. However, not all trees need or require fertilization. Refer to this publication on fertilization for more information.

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Professional arborists can best feed mature trees

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Newly-established trees benefit from fertilizer

2. ***Complete cultural practices.***
   It's always beneficial to the tree to replenish mulch to give root systems an extra layer of protection against temperature extremes. This helps maintain the moisture levels in the soil during those drier winter months as well. Maintaining 2-3 inches of composted mulch over the root zone of the tree and landscape provides great protection. Also, it may be a good time to consider providing protective wraps on thin-barked or newly planted trees, if needed. Also, now is a good time for inspecting those existing wraps to be sure they are effective and not too tight around the trunk or harboring hidden pest issues.

1. 

Mulch provides a blanket of protection

1. 

Good moisture levels going into the winter is critical for tree health

2. ***Water needed, still.***
   The dry, cool air and low precipitation that can sometimes occur during fall and early winter can take a toll on trees. Provide supplemental irrigation with deep watering to prevent root damage and a good spring start. It is advisable to water only when temperatures will be above 40°Water around mid-day so there is time to soak in before the freezing night temperatures. Applying approximately 5 gallons water per inch of tree diameter will be adequate for times when there is little to no rainfall going into winter.
3. ***Take inventory.***

ISA Certified Arborists can provide the best care for your trees

This is a good time to assess your site for vacancies. Check your property for potential planting locations to install new trees next spring. Research during the winter allows plenty of time for good decision-making which includes proper species selection and suitable locations. Refer to the tree selection publication for more information.

There are many resources available to learn about proper tree care. If you are uncertain on how to maintain your trees or prefer professional services, it is important to reach out to an ISA Certified Arborist to help with the tree, within your landscape, especially the larger, mature trees. A Certified Arborist can proactively identify, analyze and evaluate your tree needs to maintain this important asset, your trees.

Evaluating the Business and Owner Characteristics Influencing the Adoption of Online Advertising Strategies in the Green Industry

(Kyle Daniel, daniel38@purdue.edu)

As a follow-up to our Horticultural Economist's, Dr. Ariana Torres, previous research into business and marketing practices of landscape firms across the U.S (https://www.purduelandscapereport.org/article/2175/), she also co-authored another publication evaluating the business and owner characteristics influencing the adoption of online advertising strategies in the Green Industry. More information can be found below.

As more individuals use the Internet for business and leisure, the opportunities for firms to promote products and services and to communicate with consumers online increases. The objective of this study was to investigate green industry managerial decisions to engage in online advertising and how much to invest while determining the main drivers contributing to these decisions. Typically, businesses investing in online advertising spent more than 43% of all advertising expenditures in online methods, including websites, social media, and newsletters. Furthermore, the decision to engage in online advertising was driven by the percentage of wholesale and contract sales, market access, firm size, product mix, and business owners' perceptions. Results also showed that the amount of dollars invested in online advertising depended on firm size, tools used to find customers, location, and business owners' perceptions https://journals.ashs.org/horttech/view/journals/horttech/29/3/article-p374.xml

Tiny Little Black Bugs that Deliver a Big Bite!

(Tim Gibb, gibb@purdue.edu)

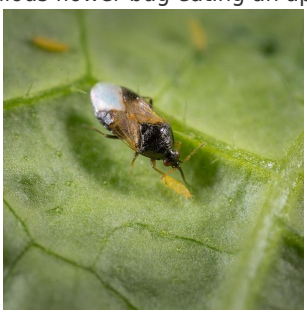
Insidious flower bug bite.

Some say they feel a sharp bite on arms or legs but then have to search to find the cause. What they find is a very tiny black bug, almost too small to cause such a bite. Rest assured, however, that these are the culprits. Think of them as – a big bite in a small

package. These bugs (insidious flower bugs) are becoming quite a nuisance on warm afternoons as of late and are expected to continue into the fall.

Insidious flower bugs are 2X larger than the period at the end of this sentence, broadly oval in shape, and black with whitish or silver markings on the back. Insidious flower bugs can fly and often make their way through window screens to provide equal irritation to people inside homes as outside. Why they bite is still a bit of a mystery. However, we know that they live up to their name “insidious” and bite when it is warm out. We have also found that they usually bite people who are perspiring slightly. They do not take blood or inject any saliva so in most cases, their bite is not particularly serious to most people. However, it is certainly annoying especially considering the small size of these bugs. Some people react more to the bite than others and may experience localized swelling like a mosquito bite. Others experience the pain but see no reactions at all. Not much can be done about these nuisance pests. Insect repellents can be used and will probably offer some protection but not complete. Covering bare skin will prevent them from biting.

Insidious flower bug eating an aphid.



Insidious flower bug eating a thrip.

Remember that during the majority of the year, these are beneficial predators because they feed on small insects and mites or on their eggs. Spider mites, aphids, and thrips are particularly attractive to these bugs. For that reason, general insecticides should not be used against these insects.

In years past we have experienced localized outbreaks of these insects and we have found that with the first frost they will be gone. Our advice now has not changed – have patience and a thick skin. They will be gone soon enough!

If it Doesn’t Hurt Your Heart, it Will Feel Like a Kick in the Butt – Wood Decaying Fungi

(John Bonkowski, jbonkows@purdue.edu)

Hunting for mushrooms is a fun past-time, even if you are not looking for edible fungi to “spice” up your cooking. However, when you see a fungal invader popping up in your lawn or landscape, they tend to be unwelcome inhabitants because they are launching sticky spore masses onto your siding, producing foul odors (Figure 1), could be eaten by your kids and/or dog, or its simply marring the aesthetic. Fungi are heterotrophs, meaning they cannot produce their own food, which is why when you find them popping up, you should be asking what are they eating?

Figure 1: Stinkhorn growing from organic matter in a home lawn. (PPDL)

Figure 2: Fairy ring in the landscape where a tree may have been planted. (Clemson University – USDA Cooperative Extension Slide Series, Bugwood.org)

If you see a fungal structure (conk or mushroom) developing near or on a shrub or tree, it is important to evaluate why it is there. Getting it identified can help you determine if it is a potential pathogen or just a happy little mushroom growing in your lawn. If it is growing directly from the shrub or tree, then you really want to figure out what it is and what potential harm it can cause to your tree.

Ecologically, fungi often fill the role of decomposers, breaking down already dead material. This is why you see stinkhorns, artillery fungi, and inkcaps growing in the mulch you placed in your garden. It is also the reason why you see fairy rings in your yard where you removed that tree stump 2 years ago (Figure 2). Some of these fungi will ride the line between decomposer and parasite. *Armillaria*, often called the honey fungus because of its color, is one such example where it can break down roots and stumps of dead trees, but it can also infect and kill stressed trees (Figure 3 and 4).

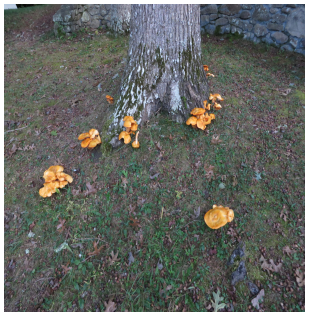


Figure 3: Armillaria mushrooms growing from root system of infected white oak. (PPDL)

Figure 4: Large root of a declining Kousa dogwood with white mycelial fans under the epidermis, characteristic of Armillaria root rot. (PPDL)

Often an infection occurs because the tree was wounded or stressed by some previous event, but it has allowed the pathogen to gain entry and begin to spread (Figure 5, 6, 7). Subsequent disease caused by the invading fungus can lead to the death of the tree, but how the disease develops can be important in whether you want to remove the tree or keep it around for just a little bit longer. There are four different general types of rot, separated by the location they are found or tissue they affect: heart rot, butt (trunk) rot, canker rot, and root rot.

Figure 5: Species of Ganoderma growing from the root and trunk of a Shumard oak. (PPDL)

Figure 6: Yellowwood tree with obvious yellow color on the trunk. Note the canopy is thinning and showing signs of stress. (PPDL)

Figure 7: Yellowwood from Figure 6, Infected by Laetiporus sulphureus (chicken of the woods). (PPDL)

Heart and canker rots are important because they can lead to the loss or dropping of limbs and a slow decline of the tree's health. Butt rots and root rots are very important because they can do the same as heart and canker rots as well as affect the structural integrity of the tree. Loss of 10% of wood due to rot can lead to 70-90% loss in wood strength. If this occurs at the trunk of the tree, it can lead to breakage or toppling (Figure 8). When the roots are rotten, a tree is no longer able to achor itself and is more susceptible to "windthrow" or being blown over (Figure 9). Trees with extensive internal rot may break or fall over on a calm day with relatively no wind. This is a real worry when the tree is near or towering over your house or could fall on someone on your property.

Figure 8: Tree trunk snapping from extensive butt rot caused by Ganoderma applanatum. (Joseph OBrien, USDA Forest Service, Bugwood.org)

Figure 9: Tree in foreground is tilting and shows roots pulling the up the grass prior to fully tipping over. (Peter Bedker, Bugwood.org)

Important take home: mushrooms growing on a tree can not only kill it but may also reduce the structural integrity of trunk, branches or roots, which can lead to breakage or create a risk that the tree may fall. See a mushroom or conk? I recommend getting it identified and/or have a certified arborist assess the tree for structural instability.

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