

# THE PURDUE LANDSCAPE REPORT

## In This Issue

- [Plant Problems? There's a mobile-friendly website for that!](#)
- [Pack Memories, Not Invasive Pests This Fall](#)
- [New Turf Pathologist](#)

## Plant Problems? There's a mobile-friendly website for that!

(Cliff Sadof, [csadof@purdue.edu](mailto:csadof@purdue.edu)) & (Janna Beckerman, [jbeckerm@purdue.edu](mailto:jbeckerm@purdue.edu))

All plants can fall victim to insects, diseases, and environmental problems. How they respond to this stress is often the same: Wilting, yellowing, holes, rots, blight—it's a long list! With so much overlap in symptoms, it can be quite a challenge for people to identify their plant health problems accurately, quickly, and inexpensively.

The [Purdue Plant Doctor](http://www.purdueplantdoctor.com) website ([www.purdueplantdoctor.com](http://www.purdueplantdoctor.com)) can help diagnose and manage the thousands of plant health problems (insect, disease, and other biotic or abiotic conditions) on over 250 species of the most common Midwest landscape plants. Just like the apps, the Purdue Plant Doctor website has thousands of color photos, and current recommendations to help homeowners, arborist or plant health care professional diagnose and manage the most common plant problems in the Midwest and Northeast US. More importantly, there is the ability to access the thousands of accurately identified and curated, high-resolution photos to help educate yourself or your clients regarding important plant health management decisions.

**How to Make a Diagnosis** The welcome page (Fig. 1) begins by allowing you to enter what you think may be the problem, allowing you to by-pass the menu based process of diagnosis. If the plant name is entered into the text box, the app will provide a list of the most common problems affecting that host (Fig 2). Scrolling down through the list will take the user directly to the topic of interest.

## Welcome to the Purdue Plant Doctor.

Enter the name of the plant, plant problem, pest, or disease,

or click your way to identify and manage your pest or disease



Broadleaf Trees, Shrubs, and Vines



Evergreen Trees and Shrubs



Flowers



Beneficials

Figure 1. Welcome Page

Enter the name of the plant, plant problem, pest, or disease,

oak

Plants  
Oak - Quercus spp.  
Problems  
Bur Oak Blight - Tubakia spp.  
Horned Oak Gall - Callirhytis cornigera (Osten Sacken)  
Jumping Oak Gall - Neuroterus saltatorius  
Oak Midge Gall Itch Mites - Pyemotes herfsi  
Oak Shothole Leafminer - Japanagromyza viridula  
Oak Spangle Gall - Neuroterus spp.  
Oak Wilt - Ceratocystis fagacearum  
Pine-Oak Rust - Cronartium quercuum  
Succulent Oak Gall - Adricus palustris  
Sudden Oak Death, Ramorum Canker and Blight - Phytophthora ramorum

or click your way to identify and manage your pest or disease



Broadleaf Trees, Shrubs, and Vines



Evergreen Trees and Shrubs



Flowers



Beneficials

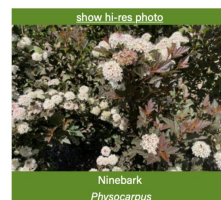
Figure 2. Entering the name of the host provides a shortcut to a list of potential problems specific to that host.

Alternatively, the user can click on the type of host plant (Broadleaf tree, shrub, vine; Evergreen tree and shrub; Flowers).

The next menu screen guides the practitioner through a visual menu of plant hosts, with a diagnostic thumbnail to assist them in correctly IDing the plant of interest. Each thumbnail can be clicked to obtain a higher resolution image to aid in identifying the host plant.



Mulch



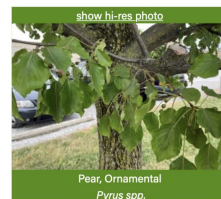
Ninebark



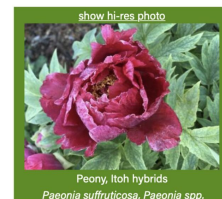
Oak



Oregon Grape Holly



Pear, Ornamental



Peony, Itoh hybrids

Selecting the host prompts the user to identify the area of concern (e.g., leaves, flowers, branches, etc.).

Green: Problem Red: Invasive

[+] Leaves / Needles

[+] Branches

[+] Trunk / Crown

[+] Roots

Choosing a location where the problem is observed opens up a menu of additional thumbnails the user can examine to locate a similar looking problem. The app then pulls from the library a selection of photos revealing signs and symptoms commonly seen on the selected tree and orders the problems from most common to least common. From here, just click on the image that best matches the pest problem of interest.

[-] Leaves / Needles



Clicking on any option reveals an additional screen with more information and images. This information can be easily downloaded, shared, or printed.

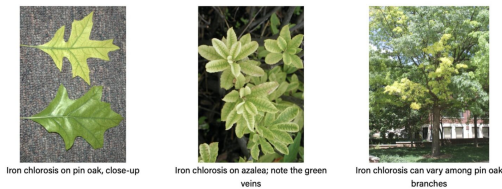
New Diagnosis

Iron Chlorosis

Download

### Key Features

- Yellowing leaves
- Dark green veins
- Premature leaf drop



### Symptoms

Iron chlorosis is a very common nutrient deficiency that is seen in many trees and shrubs growing under higher pH soil conditions (greater than pH 6.5). Leaves become pale green to yellow, and leaf veins are a darker green. On hot, sunny days the leaf margins can scorch and leaves drop prematurely.



### Management

The management of iron chlorosis is both difficult and expensive, so prevention through the selection of more tolerant plant species and cultivars is essential. Always check soil pH and submit a leaf sample for analysis. See the links section (the i in the upper left corner of the main page of this app) for a plant diagnostic lab in your state. There are several treatments for the management of iron chlorosis, but these need to be continued on a regular basis and most people find them unsatisfactory in the long-term. Foliar sprays of iron can temporarily remove symptoms, but must be applied repeatedly. Application of trunk injections by professionals can also reduce symptoms temporarily but can cause injury. For large trees, soil treatment is usually unsuccessful due to the tremendous capacity of soil to buffer its pH, and therefore is not recommended.

**Compare Look-A-Likes.** Many plant problems have a superficial resemblance to each other. For this reason, many of our plant problem entries provide a list of Look-A-Likes that you can compare to help confirm your diagnosis. Clicking on the Look-A-Like button allows you to compare images and key features of similar pests. For example, iron chlorosis is often confused for manganese deficiency.

### Lookalikes

- Manganese Deficiency

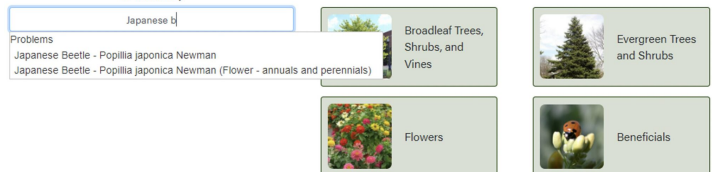
### Finding information on a particular kind of plant problem.

If you already know the cause of the plant problem, you can simply type the name of the problem in the welcome screen. By default, the website gives you information about problems on trees and shrubs. If you want management information for a known flower problem, you need to select appropriately. For example, Japanese beetles occur on trees and shrubs as well as flowers. The default Japanese beetle entry will tell you how to manage this problem on trees and shrubs. The Japanese beetle entry that specifies (Flowers- annuals and perennials) will give you suggestions for managing this pest in your flower bed.

### Welcome to the Purdue Plant Doctor.

Enter the name of the plant, plant problem, pest, or disease,

or click your way to identify and manage your pest or disease



### Getting Information on Beneficials.

Not all insects are pests. By choosing the "Beneficials" icon on the welcome screen you can identify the kind of beneficial insect you may have from a gallery of beneficial insects.

### Beneficials



**How to Share Information.** The Plant Doctor website was designed to have all of its critical information and photos in a mobile friendly format so it can be freely accessed, downloaded and shared via text, email, or even on social media platforms.

**How to Report Invasives.** Some of the pests you are likely to encounter may be newly introduced invasive pests that are not

yet widely distributed. Examples include spotted lanternfly, Asian longhorned beetle and boxwood blight. Knowing their distribution can help us provide you with better management recommendations. The Plant Doctor Website can help you report the occurrence of invasive pests to State authorities. By Clicking on the Report this pest button, you can upload a photo of an invasive and submit it directly to the authorities.

#### Resources

- [Report this pest](#)
- For more information about invasives, visit <https://ag.purdue.edu/reportinvasive/>
- [Spotted Lanternfly found in Indiana](#)

## PURDUE PLANT DOCTOR

PLANT PROBLEM DIAGNOSIS ABOUT US LANDSCAPE REPORT

Early interception of invasive pests is critical. Please send an image and the other requested information if you believe you have found this one. The Extension or State experts will review and determine if further surveying and sampling are required in the area. GPS coordinates are collected if allowed or available on your phone and if not it's important to give a useful location description such as Fountain County in Shades State Park by Shelter 7. You will only be contacted in rare instances should the Expert need more information in order to better determine the survey area.

#### Spotted Lanternfly

*Lycorma delicatula*

\*Upload a photo of the problem (click or drag)

\*Name:

\*Email:

Phone:

\*Description of Location (e.g., Shades State Park in Indiana by Visitor Center):

Comments:

Submit Report

## Pack Memories, Not Invasive Pests This Fall

(Cliff Sadof, [csadof@purdue.edu](mailto:csadof@purdue.edu))

The dry, cool weather of September heralds the beginning of the fall camping season. Although camping is a great way to reconnect with family and nature, traveling to and from your campsite can give invasive insects and plants a free ride to a new forest. Without the help of people, most exotic invasive insects spread less than 10 miles each year. If you accidentally pack them with you on your way to or from your trip, they can move thousands of miles.

The following pests are particularly good at hitch hiking in the fall. Keep an eye out for them when traveling or moving gardening equipment long distance.

**Spotted lanternfly**– Adults will lay eggs from September until the first frost on just about anything from telephone poles and tree bark to under the bumper of your car, camper or mower. Their outsized capacity to suck plant sap and excrete sticky honeydew creates sticky leaf surfaces that become covered with black sooty mold and stinging insects. Although adults and nymphs are distinctively spotted and colored, the eggs are mud colored and difficult to find.

**Spongy moths** – Like spotted lanternfly adults of this moth will lay eggs on tree trunks, under branches and on anything that is outside during the month of July when they lay their eggs. The caterpillars of this insect (formerly known as gypsy moths) have a

huge appetite for oak leaves, maples, pines and hemlock. In outbreak years like the summer of 2022 they can completely defoliate millions of acres of forest. Although the blue and red spotted caterpillars are quite distinctive, the dun-colored egg masses are difficult to find. If you are camping during July in heavily infested areas, you can easily bring the egg masses back with you.

**Wood borers** – During the autumn many invasive destructive borers like [Asian longhorned beetle](#), and [emerald ash borer](#) as well as vectors of [Thousand cankers disease](#) are in the larval stage beneath the bark. For this reason, moving firewood long distances to and from campsites risks spreading these pests. Don't share the devastation wrought by emerald ash borer and other invasives by moving firewood.



Eggs of spotted lanternfly often look like mud. (Photo by E. Barnes)



The light brown spongy egg masses of a health spongy moth can easily contain 600 to 1000 eggs. With each caterpillar capable of consuming over a 10 ft<sup>2</sup> of leaves a single egg mass is a defoliation waiting to happen! (Photo by S. Richard)



Firewood can contain many different invasive borers and diseases. Moving firewood gives these pests and pathogens a free ride (Photo by C. Sadof)

Soil borne pathogens –[Sudden oak death](#) and [boxwood blight](#) are two of many pests threatening plants in Indiana forests and landscapes. Spores of these pathogens can be spread by hikers walking over contaminated areas. Be sure to wash your boots!

[Jumping worms](#)– Are a new invasive worm that is starting to make its way into Indiana. It moves between gardens when muddy equipment is loaned, compost is shared, or when plants are traded with soil. This new invasive worm can strip the organic matter from productive garden soil and give it the inhospitable texture of coffee grinds. Trading plants with soil is not recommended in areas where these worms have been found.



Small weed seeds of invasive weeds like Japanese stiltgrass can be abundant in the fall and moved in bits of soil. (Photo c/o Knox County SWCD)

Weed seeds- Many invasive weeds can be spread by seeds in contaminated soil. [Japanese stiltgrass](#) (*Microstegium vimineum*) is a good example of a weed that produces small seed that can be transported in mud on equipment that is moved in the fall.

Follow these tips to stop invasive hitch hikers.

1. **Check Conditions.** If you are traveling to or from an

infested area you may be giving invasives a ride. In *Indiana*, the Department of Natural Resources Department of Entomology and Plant Pathology (DEPP), maintains a [pest of concern website](#) to help you find out where pests are a problem. *Nationally*, the USDA APHIS maintains a website for [locations of pests](#) by state.

2. **Don't Move Firewood.** Collect or purchase your firewood within 30 miles of where you plan to use it. Trees inside of this radius are exposed to the same types of pests and pathogens so there is a lower risk of spreading something new. If you move this wood too far (more than 30 miles) you risk moving a pest or pathogen to a new area where they can attack and kill new trees. By not moving wood far from where it is collected you can prevent the spread of these pests to new, un-infested areas
3. **Wash muddy boots, dirt filled tires, camping, gardening, and farming equipment.** Seeds of invasive weeds and the spores of plant diseases can become trapped in mud and released to new areas when moved. Always remove mud before you travel to a hiking area and immediately after your hike. Aside from the added benefit of keeping the interior of your car clean, any seeds or spores you may have picked up on the trail will stay near where you collected them. The same rule applies to mountain bikers, 4-wheelers, gardeners and farmers.
4. **Inspect your car or camper before you return from visiting areas where spotted lanternfly have been reported .** Adult female spotted lanternflies will lay their eggs on vehicles and campers from the beginning of September through the time of the first frost. Be sure to give your camper or car a good inspection before you return.
5. **Take your car or camper to the car wash, or give it a good soapy power wash** at the of the season to take off any spongy moth or spotted lanternfly egg masses. This will help kill any egg masses you missed before they hatch the following spring. Because the killing power of your washing action alone is unclear, it is best to hand remove any egg masses you see and dump them into a bucket of sudsy water before you wash you vehicle.

Finally, if for some reason you find invasive pests during your Indiana travels report them by calling 866-NO EXOTIC (866-663-9684) or send an email (with a photo of the insect if possible) to [DEPP@dnr.IN.gov](mailto:DEPP@dnr.IN.gov). For more information about this or other invasive pests facing Indiana see [ReportINvasive.com](http://ReportINvasive.com).

## New Turf Pathologist

(Abrahamson Todd W, [abraham15@purdue.edu](mailto:abraham15@purdue.edu))

Dr. Lee Miller began as an assistant professor of turfgrass pathology in January 2022. Lee previously served in a similar position at the University of Missouri from 2010 – 2021. Lee's

responsibilities include providing disease diagnosis and control recommendations for the lawn, golf, sports turf, and sod industries in Indiana and the surrounding region. In this context, Lee works closely with the Purdue Plant and Pest Diagnostic Lab with submitted turfgrass samples. Although home lawn samples are submitted frequently, samples from golf putting greens are often the most difficult to diagnose, since greens are mowed very low and are therefore prone to many diseases and stresses.



Spreading pathogen inoculum to even out inoculum loads across the plot area and reduce spatial variability of disease occurrence.

Lee's past research projects are varied, with studies involving fungicide resistance detection in dollar spot populations, fairy ring biology and prevention with spring fungicide applications, spring dead spot management and cultural control, the effects of fertility and fungicide application methodologies on large patch control, and detection of *Pythium* spp. in golf course irrigation water. At Purdue, Lee directs a large field research program with Matt Carpenter, his new research associate, serving as lead. They work with various industry cooperators to test new controls for important turfgrass diseases such as anthracnose, brown patch, dollar spot, and gray leaf spot. Lee's current research involves investigation of plant parasitic nematode dynamics in golf putting greens, black layer etiology and development, and interseeding tactics for incorporating host resistant turfgrass cultivars.

This was taken from the ANR Newsletter. To see the entire story and other articles concerning Agriculture and Natural Resources please check out the [ANR Newsletter](#).

To submit a turf sample go to the [PPDL website](#) and download the form to send in with your sample.

It is the policy of the Purdue University that all persons have equal opportunity and access to its educational programs, services, activities, and facilities without regard to race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability or status as a veteran. Purdue is an Affirmative Action Institution. This material may be available in alternative formats. 1-888-EXT-INFO Disclaimer: Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may have similar uses. Any person using products listed in this publication assumes full responsibility for their use in accordance with current directions of the manufacturer.

Purdue Landscape Report © Purdue University - [www.purduelandscape-report.org](http://www.purduelandscape-report.org)

Editor: Kyle Daniel | Department of Horticulture and Landscape Architecture, 625 Agriculture Mall Dr., West Lafayette, IN 47907