

# THE PURDUE LANDSCAPE REPORT

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## Wet conditions continue

(Beth Hall, hall556@purdue.edu)

There was an interesting conversation among drought experts this week about how best to communicate drought, particularly when surface conditions appear so saturated. I thought of Indiana a lot during this discussion because with all the rain the state has received over the last several weeks (over twice the normal amount!), there is localized flooding, and streams seem to be in good shape. However, groundwater levels are still below normal across much of the state, (particularly western Indiana, but also locations in northeast, central, and southern Indiana) that what we see on the surface may not be making its way down into our aquifers. This could become critical for water supply not only for domestic use but possibly irrigation later in the growing season. In fact, according to the National Oceanic and Atmospheric Administration (NOAA), southwestern Indiana is still trying to make up an approximate 3-inch precipitation deficit and southern Indiana is facing a 3-to-6-inch deficit. Fortunately, April has been wet, so those deficits will hopefully be eliminated within the next few weeks. However, when ones sees the most current U.S. Drought Monitor (USDM) map for Indiana and wonders how there could still be areas designated as Abnormally Dry (D0), remember that all types of drought (e.g., hydrological, socioeconomic, meteorological) are being considered and not just agricultural drought. The latest USDM continues to show a small band of Abnormally Dry (D0) conditions in southwestern Indiana along the Ohio River. (Figure 1)

### U.S. Drought Monitor Indiana



April 16, 2024  
(Released Thursday, Apr. 18, 2024)  
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)				
	None	D0	D1	D2	D3
Current	93.59	0.41	0.00	0.00	0.00
Last Week (4-8-2024)	93.58	0.42	0.00	0.00	0.00
3 Month Ago (1-16-2024)	18.62	81.38	21.19	0.00	0.00
Start of Calendar Year (1-1-2024)	10.70	89.30	81.12	12.88	0.00
Start of Water Year (10-1-2023)	1.38	98.62	85.30	0.00	0.00
One Year Ago (4-16-2023)	60.00	0.00	0.00	0.00	0.00

**Intensity:**

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://www.frd.gov/#DroughtMonitor> or [droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

**Author:**  
Lindsay Johnson  
National Drought Mitigation Center

[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

Figure 1. U.S. Drought Monitor conditions for data collected through Tuesday, April 16, 2024.

Modified accumulated growing degree days since April 1<sup>st</sup> continue to increase rapidly due to the warmer temperatures. Ranges now extend from over 80 units in northern counties to over 140 units in southern counties. (Figure 2) This is only about 5 to 20 units ahead of normal for this time of year.

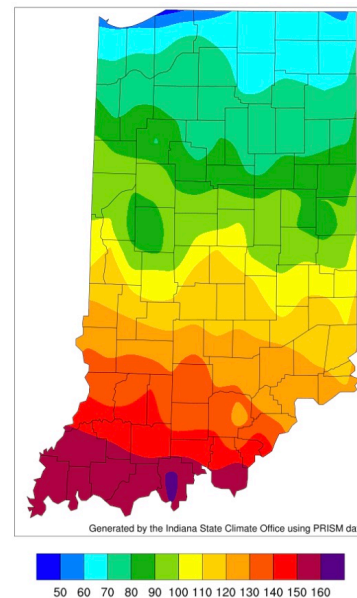


Figure 2. Modified growing degree day (50°F / 86°F) accumulation from April 1-17, 2024.

Aside from another rain event passing through our area at the end of this week, conditions appear to clear up for most of this next week. NOAA climate outlooks for April 23-27 (6-10-day outlook) is favoring near-normal temperatures with a slight

chance of above-normal precipitation. However, the 8-14-day outlook (Apr 25-May 1) is strongly favoring above-normal temperatures and precipitation. The climate outlook for May (released April 18<sup>th</sup>) is favoring above-normal temperatures for Indiana. For northern Indiana, the outlooks are indicating an equal chance of having either above- or below-normal precipitation with southern Indiana slightly favoring a wetter-than-normal May. Similar outlooks have been released for the 3-month period of May-June-July regarding temperature and precipitation.

## Viruses of Hydrangea

(Janna Beckerman, jbeckerm@purdue.edu)

Hydrangea L. (family Hydrangeaceae Dumort) is an all-encompassing description of a group of herbaceous and woody flowering plants, composed of more than 80 species native to Asia (including Japan), Indonesia, the Americas. Popular hydrangea species include the bigleaf hydrangea (*Hydrangea macrophylla*), also known as French hydrangea, panicle (peegee) hydrangea (*H. paniculata*), oak-leaf hydrangea (*H. quercifolia*) and mountain hydrangea (*H. serrata*).

Hydrangea are host to at least 17 reported viruses (Table 1), and aster yellows. Viral diseases may impact the appearance and health of hydrangea, with symptoms including leaf yellowing (chlorosis), mosaic, chlorotic and/or necrotic ringspots (Fig. 1), leaf mottling and distortion, blotches, stunting (Fig. 2) and sometimes flower virescence, which describes flowers reverting to leaf development (Fig. 3). However, conclusive diagnosis requires the use of one of two tests: Enzyme-linked immunosorbent assay (ELISA) test, which is similar to commonly used COVID or pregnancy tests and detects specific proteins, or a polymerase chain reaction (PCR) which is a DNA/RNA based test that detects virus-specific nucleic acids. It is also important to recognize that all living organisms support some viruses and only a few of them (chiefly, those that can spread to multiple hosts and result in severe symptoms) require actual management.



Figure 1. Hydrangea chlorotic mottle virus. Photo by the Purdue Plant and Pest Diagnostic Lab.



Figure 2. Hydrangea ringspot virus. Photo by the Purdue Plant and Pest Diagnostic Lab.



Figure 3. Hydrangea virescens. Photo by the Missouri Botanical Garden.

Virus	VECTOR	ELISA Test	PCR Test
Alfalfa mosaic virus (AMV)	Insect: multiple aphid species	✓	✓
Arabis mosaic virus (ArMV)	Nematode: <i>Xiphinema americanum</i>	✓	✓
Cherry leaf roll virus (CLRV)	none known; mechanical	✓	✓
Cucumber mosaic virus (CMV)	Insect: multiple aphid species	✓	✓
Eggplant mottle dwarf virus (EMDV)	leafhoppers: <i>Anaceratogallia laevis</i> and <i>A. ribauti</i>	✓	✓
Hydrangea mosaic virus (HdMV)	none known; mechanical	✓	✓
Hydrangea latent virus (HdLV)	none known; mechanical	✓	✓
Hydrangea ringspot virus (HdRSV)	none known; mechanical	✓	✓
Hydrangea chlorotic mottle virus (HdCMV)	green peach aphid, <i>Myzus persicae</i>	✓	✓
Hydrangea vein-banding virus (HdVBV)	green peach aphid, <i>Myzus persicae</i>	✓	✓
Impatiens necrotic spot virus (INSV)	western flower thrips, <i>Frankliniella</i> sp.	✓	✓
Tobacco necrosis virus (TNV)	Fungus: <i>Olpidium brassicae</i>	✓	✓
Tobacco rattle virus (TRV)	Nematode: <i>Trichodorus</i> and <i>Paratrichodorus</i>	✓	✓
Tobacco ringspot virus (TobRSV)	Nematode: <i>Xiphinema americanum</i>	✓	✓
Tomato blackring virus (TBRV)	Nematode: <i>Longidorus elongatus</i>	✓	✓
Tomato ringspot virus (TomRSV)	Nematode: <i>Xiphinema americanum</i>	✓	✓
Tomato spotted wilt virus (TSWV)	western flower thrips, <i>Frankliniella</i> sp.	✓	✓

There are numerous vectors of hydrangea viruses, including insects (aphids, leafhoppers); nematodes (*Xiphinema americana*, *Longidorus elongatus*, and *Trichodorus* and *Paratrichodorus* spp.), and even a fungus (*Olpidium brassicae*).

Management: All living organisms harbor viruses, many of which are latent viruses, that exist within a plant but cause little to no damage (Fig. 1). Problems can develop when certain combinations of viruses co-infect in a single plant, resulting in significant impacts to a plants appearance (Fig. 2), or its ability to fruit and flower (Fig. 3). Sometimes these impacts are specific to only one species of plant or limited to specific cultivars, that may be grown together. One well known example are tulip break viruses that cause interesting color breaks in tulips but are lethal to nearby lilies (and vectored by aphids that feed on both, and *Prunus* spp.). So yes, virus management is complicated!

In all plants, viruses are almost always systemic, spreading throughout the entire plant, and even, in some instance, into seeds and fruit. Unfortunately, there is no cure for virus-infected plants. While some viruses may not spread to other hosts, other viruses, like tobacco rattle virus, can be spread throughout entire plantings or nurseries to hundreds of hosts by nematodes, whereas others, like impatiens necrotic spot and tomato spotted wilt can be spread to hundreds of species of plants by thrips.

Managing viruses requires an integrated approach, beginning with identification of what virus is present, and excluding those viruses that may spread readily to other hydrangea or other plants (like tobacco rattle virus, tomato ringspot virus, INSV/TSWV). To prevent the introduction of new viruses into a planting (quarantine) it is important to protect susceptible plants by controlling the vector(s) with insecticides, fungicides or nematicides, when appropriate; careful propagation of plants, sterilizing tools with disinfectant between cuttings to minimize the mechanical spread of virus; controlling weeds which can serve as asymptomatic reservoirs of virus, and hardest of all, roguing/culling infected symptomatic plants to prevent the spread of viruses. Sometimes the best plant love is tough love!

#### Literature Cited:

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Parrella, Giuseppe, and Elisa Troiano. 2022. A New Ilarvirus Found in French Hydrangea. *Plants* 11: 7: 944.

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## So, the saying goes... Save the Stems, Leave the Leaves, and No Mow May

(Karen Mitchell, [mitcheka@purdue.edu](mailto:mitcheka@purdue.edu))

Gardeners are bombarded with sayings like save the stems, leave the leaves, and no mow May. These sayings are rooted in the same goal of protecting pollinators, but often leave gardeners with more questions. Let's dig into each of the sayings.



Figure 1. A native planting will promote pollinators on your properties.

#### Save the stems:

The first question that often arises from this saying is: "When can I cut out and remove the dead stems?" There is not a straightforward answer and it's important to understand why it's recommended in the first place. When left to overwinter, dead flower stalks with their seed heads provide a food source to our year-round residents like the American goldfinch, Tufted titmouse, and Black-capped chickadees. Once spring arrives, dead flower stalks become nesting sites for some of Indiana's 400+ native pollinators. With such a diverse population, one size (and one temperature) doesn't fit all. Stalks should be pruned to a variety of heights between 8 and 24 inches in early spring to

accommodate a variety of insects. Last year's cut dead stems become home to larvae throughout the summer and are hidden by the new growth. These same stems will continue to be utilized through next winter for insect larvae and overwintering adults. So yes, gardeners can prune back dead stems now, but more importantly, leave the cut stems standing. They will naturally decompose and fall, hence the saying, "Save the stems."

#### Leave the leaves:

There is a myriad of reasons to "leave the leaves." Leaves act as nature's mulch; providing nutrients and organic matter as well as protection from Indiana's unpredictable temperature swings. When it comes to pollinator protection, fallen leaves provide a winter habitat for a majority of our butterflies and moths. Gardeners are often left wondering, "When can I remove the leaves?" Ideally, never, but if leaving the leaves is not a permanent option, it's best to let them lay until late spring. Leaving them untouched through May provides ample opportunity for hibernating insects to emerge. In landscapes where leaving the leaves isn't an option, consider raking leaves for use as mulch around trees, shrubs, and perennials creating an area to "leave the leaves" indefinitely.

#### No Mow May:

This catchy phrase is rooted in good intentions of protecting pollinators and reducing carbon emissions. However, these benefits will only apply if there are wild flowers in the lawn. A solid turfgrass lawn, void of low growing flowers, will not provide benefits to pollinators regardless of how tall it gets. If turfgrass is left to grow through May, more mowing may be needed in June to compensate, contributing to an increase in carbon emissions. As some are beginning to understand the impracticality of a "no mow May," the saying "low mow May" has emerged. Let's counter that with a "low mow lawn." Instead of focusing on one month, consider making a low mow lawn year-round.

If the goal is to provide direct benefits for pollinators, there is a clear way to achieve a low-mow lawn. Encourage or establish low growing wildflowers, instead of turfgrass. A "weedy lawn" filled with clover, violets and dandelions provides a food source for pollinators and reduces mowing frequency. If a manicured turfgrass is required, but there's still desire to protect pollinators, take steps to reduce mowing frequency and chemical inputs. Lawns that are 3 inches or taller are more resistant to weeds decreasing the need for herbicide applications. Utilizing a mulching lawnmower returns nutrients from grass clippings and decreases the amount of chemical fertilizer needed. While one method provides direct benefits and the other minimizes harm, both provide pollinator protection.

Ultimately, pollinator protection should not be considered an all-or-nothing endeavor. Save the stems that don't get in the way, leave the leaves where appropriate, and mow only when needed.

#### Further resources

Purdue Pollinator Protection series - <https://extension.entm.purdue.edu/publications/pubs/PollinatorProtection.html>



Xerces Society for Invertebrate Conservation –  
<https://www.xerces.org/>

Purdue Turf Science: 7 Simple Steps to a Better Home Lawn –  
<https://www.extension.purdue.edu/extmedia/AY/AY-32-W.pdf>

## Aprenda a Diagnosticar Problemas de las Plantas con Videos en YouTube

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



Los video enlaces de las Guías Rápidas para las versiones en inglés y español están disponibles en [PurduePlantDoctor.com](http://PurduePlantDoctor.com)

Identificar qué problema tiene la planta es el primer paso para mejorar la salud de las plantas en el jardín. Hemos creado una serie de videos cortos (5 a 7 minutos de duración) en YouTube. Esto lo hemos hecho para ayudarlo a aprender o simplemente mejorar sus habilidades de diagnóstico de plantas. Cada video te guiara a través del proceso de diagnóstico, la biología de las plagas y consejos sobre el manejo de las anteriores. Los videos terminan con una demostración de cómo usar Purdue Plant Doctor para confirmar su diagnóstico y obtener recomendaciones actualizadas. Las pestañas de momentos clave te ayudan a navegar por cada video.

### Hay cuatro formas de ver estos videos en español o inglés:

1. Visite [PurduePlantDoctor.Com](http://PurduePlantDoctor.Com) y seleccione la pestaña Quick Videos
2. Utilice estos [enlaces en español](#) o [en inglés](#) que te redirigirá a la lista de reproducción de YouTube
3. Busque en YouTube la lista de videos de Purdue Plant Doctor.
4. Haga clic en los enlaces en español o inglés para cada video de este artículo

**Aquí encontraras los enlaces a nuestros videos de Guía rápida.** El tiempo entre paréntesis proporciona la duración de cada video en inglés en minutos y segundos. **Las versiones en español** son un poco más largas debido a la necesidad de transmitir nombres de árboles y plagas en inglés y español, así como instrucciones sobre cómo traducir el sitio web de Purdue Plant Doctor al español.

**Guía Rápida para diagnosticar y Manejar Problemas de las Plantas con el Purdue Plant Doctor (8:45) En inglés (5:09)** Aprenda cómo diagnosticar y manejar problemas de plagas y

enfermedades en plantas ornamentales y mantenga las plantas sanas y hermosas. La página web Plant Doctor es un sitio web listo para dispositivos móviles que puede mejorar la comunicación entre los profesionales del cuidado de plantas y sus clientes.

**Manejo de barrenadores de Pino con el Purdue Plant Doctor (7:49) En inglés (5:13)** Los barrenadores pueden ser un problema grande en paisajes que utilizan pinos y otros árboles de hoja perenne como cortavientos o pantallas visuales. Aprenda cómo detectar problemas de barrenadores antes de que destruyan su plantación y obtenga consejos sobre cómo proteger estos árboles coníferos de los barrenadores.

**Manejo de insectos Barrenadores de Árboles con el Purdue Plant Doctor (8:39) En inglés (7:20)** Los barrenadores también pueden atacar árboles de hojas estresadas. Descubra por qué el estrés por sequía y temperaturas altas promueve los problemas con los barrenadores y qué puede hacer para controlar los barrenadores que comúnmente encontraras.

**Manejo de los Ácaros (Arañas rojas) con Purdue Plant Doctor (6:50) En inglés (5:56)** Los ácaros (spider mites) pueden ser pequeños, pero pueden causar problemas grandes. Aprenda cómo detectar los ácaros antes de que dañen las plantas y qué puede hacer para mantener las plantas sanas antes y después de que se detecten los ácaros.

**Manejo de las Chinches de Encaje (Lacebugs) con Purdue Plant Doctor (6:12) En inglés (4:59)** Aunque las chinches son comunes, a menudo se diagnostican erróneamente como arañas rojas y se tratan incorrectamente. Aprende qué son los chinches de encaje o en inglés "Lacebugs", cómo detectarlas y qué puedes hacer para mantener las plantas sanas.

**Gestión de escamas y cochinillas con Purdue Plant Doctor (9:30) En inglés (6:53)** La sequía y el aumento de las temperaturas pueden hacer que las plantas sean más susceptibles a las cochinillas (scales and mealybugs). Aprenda sobre las amenazas que estos insectos representan para sus plantas y paisajes. Luego, descubra cómo puede monitorearlas y mejorar su capacidad para mantener sus plantas a salvo de daños.

**Manejo de Aídos con Purdue Plant Doctor (6:04) En inglés (5:17)** Los problemas con los áfidos pueden convertir su paisaje en un desastre pegajoso. Conozca las amenazas que suponen para sus plantas y cómo detectarlas y gestionarlas.

**Manejo del Japanese Beetles con Purdue Plant Doctor (5:57) En inglés (5:02)** Los escarabajos japoneses pueden dañar su jardín al consumir las flores y hojas de sus plantas ornamentales o al matar su césped. Descubra por qué las trampas para escarabajos japoneses sólo causan mas problemas. Obtenga la información más reciente sobre estos escarabajos y cómo controlarlos.

**Manejo de orugas en jardines de mariposas y paisajes con Purdue Plant Doctor (6:01) En inglés (4:52)** Aunque son polinizadores importantes, las mariposas, las polillas y las orugas pueden causar daños destructivos a sus plantas. Los gusanos de bolsa (bagworms), las orugas de las tiendas de campaña (tent

caterpillars) y los gusanos web (webworms) son problemas comunes en el jardín. Aprenda a evaluar la amenaza de estas y otras orugas y mantenga sus plantas saludables.

**Manejo de Avispas Porta Sierra (Moscas Sierra) con Purdue Plant Doctor (6:24) En inglés (5:20)** Aprenda qué son las avispas porta sierra (sawflies), la amenaza que representan para sus plantas y por qué es importante distinguirlas de las orugas. Luego obtenga consejos sobre cómo manejarlos.

**Manejo de Minadores de Hojas con Purdue Plant Doctor (5:50) En inglés (4:41)** Los minadores de hojas pueden ser difíciles de controlar cuando se alimentan de forma segura dentro de una hoja. Aprenda cómo diagnosticar los minadores de hojas y la mejor manera de proteger sus plantas contra daños.

**Manejo de las Agallas (Fisuras por Estrés en las Plantas) con Purdue Plant Doctor (6:54) En inglés (5:42)** ¿Quiere aprender a diagnosticar y manejar las agallas en las plantas y cómo las afectan? Este video analizará las causas de las agallas en las plantas y lo que debe hacer para mantenerlas saludables.

1. Visit [PurduePlantDoctor.Com](https://PurduePlantDoctor.Com) and Select the QuickGuides tab
2. Use these [English](#) or [Spanish](#) links to the YouTube Playlist
3. Search YouTube for Purdue Plant Doctor Playlist
4. Click on English or Spanish links for each video in this article

**Here is a guide and links to our Quick Guide videos.** The time stamp in parentheses provides the length of each English video in minutes and seconds. **Spanish versions** are a bit longer due to the need to convey both English and Spanish names of trees and pests as well as instructions on how to translate the Purdue Plant Doctor website into Spanish.

**Diagnosing Plant Problems with the Purdue Plant Doctor Web Page (5:09)** Learn how to diagnose and manage pest and disease problems on ornamental plants and how to keep your plants healthy. The Plant Doctor Web page is a mobile-ready website that can improve communication between plant care professionals and their clientele. **Spanish Version (8:45)**

**Beating Back Borers of Pines and Other Cone Bearing Trees with the Purdue Plant Doctor (5:13)** Borers can be a real problem in landscapes that use pines and other evergreens to serve as a windbreak or a visual screen. Learn how to detect borer problems, before they destroy your planting and get tips on how to protect these coniferous trees from borers. **Spanish Version (7:49)**

**Learn About Managing Boring Insects with the Purdue Plant Doctor (7:20)** Borers can also attack stressed deciduous trees. Learn why stress promotes borer problems and what you can do to manage the common borers you will encounter. **Spanish Version (8:39)**

**Managing Spider Mite Mayhem with the Purdue Plant Doctor (5:56)** Spider mites, may be small, but they can cause big problems. Learn how to detect mites before they harm plants, and what you can do to keep plants healthy before and after mites have been detected. **Spanish Version (6:50)**

**Cedar-Apple Rust (Juniper Rusts) (3:04)** Learn how three common rust diseases, cedar-apple, cedar-hawthorn, and cedar-quince affect junipers and their alternate hosts. Watch how rainfall transforms galls on junipers into jelly-like cushion-balls that produce the teliospores who germinate into the basidiospores which infect apple, hawthorn, quince and other plants in the rose family.

**Managing Lacebugs with the Purdue Plant Doctor (4:59)** Although lacebugs are common, they are often misdiagnosed as spider mites and treated incorrectly. Learn what lacebugs are, how to detect them and what you can do to keep plants healthy. **Spanish Version (6:12)**

**All You Need to Know about Managing Scales and Mealybugs with the Purdue Plant Doctor (6:53)** Drought and rising temperatures can make plants more susceptible to scale insects. Learn about the threats these insects pose to your plants and landscapes. Then find out how you can monitor them and improve your ability to keep your plants safe from harm. **Spanish**

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## Learn to Diagnose Plant Problems with Quick Guide YouTube Videos

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



Links to the English and Spanish Versions of the Quick Guide Video Series are Available at [PurduePlantDoctor.com](https://PurduePlantDoctor.com)

Identifying a plant problem is the first step to improve the health of plants in the landscape. We created a series of short (5 to 7 min) YouTube videos to help you learn or just brush up your plant diagnostic skills. Each video guides you through the diagnostic process in real landscapes, reviews pest biology and provides tips on management. Videos finish with a demonstration of how to use the Purdue Plant Doctor to confirm your diagnosis and get current recommendations. Key moments tabs help you help you navigate through each video.

**Four ways to watch these videos in English or Spanish:**

## **Version (9:30)**

**Magnolia Scale - Meet Your Enemies (1:18)** Need to be convinced that beneficial insects can protect plants from scale insects? Watch magnolia scales get slaughtered by ladybugs and parasitic wasps. See how ladybugs disguise themselves as mealybugs to hide from ants as they feast on magnolia scales.

**Taming Aphid Problems with the Purdue Plant Doctor (5:17)** Aphid problems can turn your landscape into a sticky mess. Learn the threats they pose to your plants and how to detect and manage them. **Spanish Version (6:04)**

**Managing Japanese Beetle with The Purdue Plant Doctor (5:02)** Japanese beetles can wreak havoc in your landscape by consuming the flowers and leaves of your ornamental planting or by killing your turf. Learn why Japanese beetle traps only make Japanese beetle problems worse. Get the latest information about these beetles and how to control them. **Spanish Version (5:57)**

**Managing Caterpillars in Butterfly Gardens and Landscapes with the Purdue Plant Doctor. (4:52)** Although butterflies and moths are important pollinators, caterpillars may

cause unacceptable damage to your plants. Bagworms, tent caterpillars and webworms are common landscape problems. Learn how to assess the threat of these and other caterpillars and keep your plants healthy. **Spanish Version (6:01)**

**Slaying Sawflies with the Purdue Plant Doctor (5:20)** Learn what sawflies are, the threat they pose to your plants and why it is important to distinguish them from caterpillars. Then get tips on how to manage them. **Spanish Version (6:24)**

**Managing Leafminers with the Purdue Plant Doctor (4:41)** Leafminers can be hard to control when they are safely feeding inside a leaf. Learn how to diagnose leaf miners and the best way to protect your plants from damage. **Spanish Version (5:50)**

**Managing Plant Galls with the Purdue Plant Doctor (5:42)** Galled about Galls? Want to learn how to diagnose bumps on plants and how they affect plants? This video will discuss the causes of plant galls and what you need to do to keep your plants healthy. **Spanish Version (6:54)**

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