

THE PURDUE LANDSCAPE REPORT

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Guignardia Leaf Blotch

(Janna Beckerman, jbeckerm@purdue.edu)

Guignardia leaf blotch infects *Aesculus* species, which include the native plants Ohio buckeye (*A. glabra*), bottlebrush buckeye (*A. parviflora*), along with the less common painted buckeye (*A. sylvatica*) and red (*A. pavia*) buckeye. The non-native horse-chestnut (*A. hippocastanum*) is also a susceptible host of this disease (Fig. 1).



Figure 1.



Figure 2

Symptoms

The fungus *Guignardia aesculi* (pronounced Gwin-yard-ee uh) infects the leaves of *Aesculus* species, causing an irregularly-shaped reddish-brown lesions or 'blotch' on leaflets. These blotches are often surrounded by a yellow, chlorotic halo (Fig. 2). Lesions expand and blotches may envelop the entire leaflet. Blotches that occur on the margin of leaves may result in distortion, curling and wrinkling. Unlike many foliar diseases, *Guignardia* blotch infected leaves often remain attached to the branch.

Careful examination of the leaves will often reveal black, pinhead-sized pustules (pycnidia) that may be readily observed with a hand lens and are a key diagnostic sign of this disease (Fig. 3).

These pycnidia serve as a source of spread during the summer and overwintering inoculum on fallen leaves. This asexual state (imperfect) is sometimes referred to as *Phyllosticta* spp.

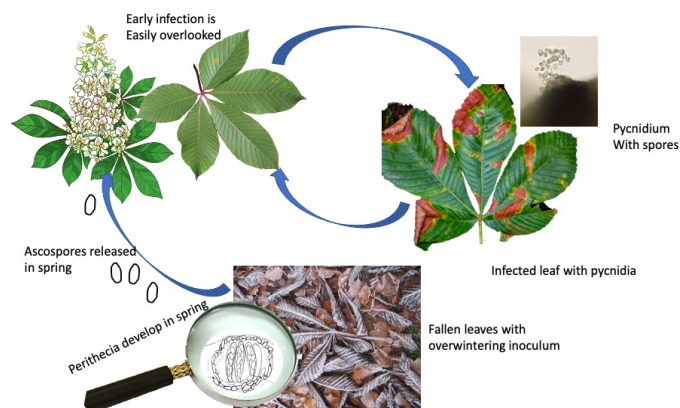


Figure 3

Disease Cycle

Leaves are infected mid-spring, just as *Aesculus* species are blooming. Weeks later, the first symptoms of the disease appear, beginning with discrete lesion appearing on the leaflets. Lesions expand and the fungus sporulates and reinfects whenever weather is wet. The fungus overwinters, undergoing meiosis (sexual recombination) in the spring, releasing ascospores from fallen leaves and repeating the disease cycle (Fig.3). Although dramatic in appearance, the disease has little impact on otherwise healthy trees and shrubs.

Management

Although unsightly, the disease does not impact the overall health of the infected plant. Pruning to open the canopy will increase air circulation, promote drying and prevent some infection. A number of fungicides (Table 1) are labeled for disease management, and will preserve the appearance of specimen trees, but are not recommended or warranted in most instances. Begin applications to prevent prior infection by ascospores prior to bloom and after bloom, followed by one to two additional applications if the weather is conducive for disease (i.e., repeated rainfall with cooler weather).

Table 1

TRADE NAME	COMMON NAME	FRAC Code	Protectant or Systemic	REI	SITE
Armada	trifloxystrobin + triademfon	11+3	S	12h	N, L, I
Avelyo	mefentrifluconazole	3	S	12 h	G, N, L, I, S
Banner Maxx Propiconazole	propiconazole	3	S	24h	N,L
Broadform	trifloxystrobin + fluopyram	7+11	S	12 h	G, N, L, I, S
Camelot O	copper	M	P	4 h	G, N, L, I, S
Captan	captan	M	P	48 h	G, N
Cleary's 3336; OHP6672	thiophanate-methyl	1	S	12	G,N,L,I
Compass,	trifloxystrobin,	11	S	12 h	G, N, L, I, S
Concert II	propiconazole + chlorothalonil	M+3	P+S	12h	N,L
Daconil, PathGuard	chlorothalonil	M5	P	12 h	G,L,I
Disarm, Fame	fluoxastrobin	11	S	12	G, N, L, I, S
Eagle, Systhane	myclobutanil	3	S	24	G,N, L
Heritage	azoxystrobin)	11	S	4 h	G, L, N, S
Mural	azoxystrobin + benzovindiflupyr	7 + 11	S	12 h	G, N,S, L
Orchestra	fluxapyroxad + pyraclostrobin	7 + 11	S	12 h	G, N, L, I, S
Pageant Intrinsic	pyraclostrobin + boscalid	11+7	S	12 h	G, N, L, I, S
Palladium	cyprodinil + fludioxonil		S	12 h	G, N, L
Protect DF	mancozeb	M	P	24 h	
Rubigan	fenarimol	3	S	12	N,L
Spectro 90	thiophanate-methyl + chlorothalonil	M+1	P+S	12	G, N, L
Strike, Bayleton	bayleton	3	S	12	G,N,L
Sulfur	Sulfur	M	P	varies	
Terraguard	triflumazole	3	S	12	G, N, L
Torque	tebuconazole	3	S	12	N,L
Tourney	metconazole	3	S	12	N,L
Trinity	triticonazole	3	S	12	G, N, L, I, S
Zyban WSB	thiophanate-methyl + mancozeb	M+1	P+S	24	G, N, L, I

Kiss My Aster

(Karen Mitchell, mitcheka@purdue.edu)



Figure 1. Chrysanthemums line the store front in September. Photo credit: Karen Mitchell

Fall is the time of year when many gardeners rush out to buy chrysanthemums by the gallon. Mums line the front of every shop and are great for replacing the fading annuals on the front step (Figure 1). As a perennial, mums have the potential to provide beautiful blooms year after year. However, gardeners may find that their mums aren't as hardy as expected. Having been pampered by the plant nursery with just the right amount of water, fertilizer, and pesticides, the mum can suffer transplant shock once it's planted in the ground and the pampering typically stops. Often times, it fails to produce the perfect ball of blooms the following year as expected. If you are looking for a quick fix for that empty container, chrysanthemums offer a great selection of color. If you are hoping for a hardy perennial, there are a number of asters that will thrive in Indiana gardens, with minimal pampering, while providing fall color and food for butterflies.

New England Aster (*Symphyotrichum novae-angliae*) is a full-sun herbaceous perennial that reaches 3 to 5 feet and offers bright purple flowers without the need for weekly watering or fertilizer. Maintenance is minimal. In early spring, the previous year's plant material will need to be cut back and removed. If a more compact plant is desired, prune once or twice in early summer. No need to be fussy when pruning asters. Remove one-third of the height for a bushy plant with loads of flowers (Figure 2).

'Wood's Pink' Aster (*Symphyotrichum* 'Wood's Pink') has the same requirements as the New England Aster, but only reaches a height of 1 to 2 feet, making it more suitable for a border or along a path. With an incredible number of daisy-like flowers with a yellow center, it is a favorite amongst gardeners and pollinators (Figure 3).



Figure 2. A New England Aster has been pruned to fit in a landscape bed outside a restaurant. Photo credit: Amy Thompson

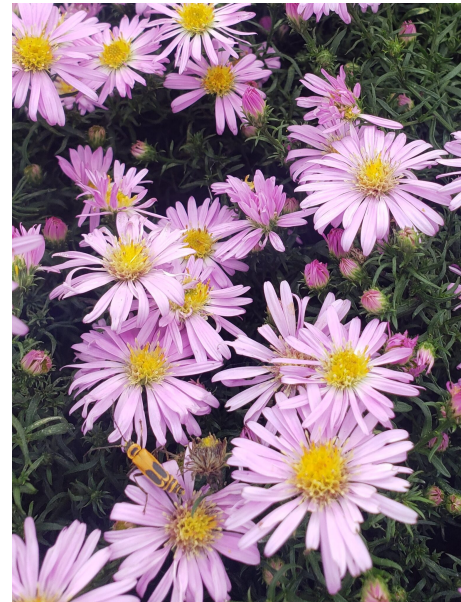


Figure 3. 'Wood's Pink' Aster with a beneficial soldier beetle feeding on pollen and nectar. Photo credit: Karen Mitchell

Asters are also available in white and blue with heights ranging from 1 to 6 feet so there's one for just about any size garden. For more information on these asters and other native plants, view the Pollinator Protection series at <https://extension.entm.purdue.edu/publications/pubs/PollinatorProtection.html>. The Recommended Indiana-Native Plants for Attracting Pollinators publication (POL-6) offers an easy chart to make sure your garden is blooming from spring through fall for both you and the pollinators to enjoy.

Where Have All the Monarch Butterflies Gone?

(Christine Elliot, ellio139@purdue.edu)

Throughout Indiana, the characteristic flashes of orange and black

wings that announce the arrival of the monarch butterfly have largely been missing. Within their native range, monarch butterfly populations have declined steeply since the 1990s, landing them on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species this year. Much of their decline is due to loss of habitat and host plants coupled with increased herbicide and insecticide use. Climate change can also wreak havoc on monarchs since they require adequate moisture and a narrow range of temperatures to thrive.



Figure 1. Monarch butterfly on common milkweed. Photo by John Obermeyer, Purdue Extension Entomology.



Figure 2. Monarch caterpillar feeding on milkweed leaf. Photo by John Obermeyer Purdue Extension Entomology

Monarch caterpillars must feed on milkweed, *Asclepias spp.* (Asclepiadaceae), to grow into adult butterflies. As they eat leaves, stems, and seed pods, they store toxins that help them survive. As adults, those toxins make them unpalatable and protect them from predators. Monarch caterpillars’ reliance on milkweed as their sole food source puts monarchs at increased risk of population decline. In the Hoosier state, much of the native grassland, which would have supported vast numbers of milkweed plants, has been converted to agriculture. Broad-spectrum insecticides and herbicides may further reduce monarch numbers. Without adequate access to milkweed free of insecticide drift, monarchs’ numbers drop.

Furthermore, Indiana’s spring to summer breeding season was unusually dry this year, with areas receiving only approximately 50% of the expected rain between March and August. Late spring cold snaps and summer heatwaves further stressed the Indiana monarchs. Current climate change projections for Indiana indicate this may be an ongoing issue. Research forecasts increasing temperatures for the Midwest over the coming decades, with a predicted twenty-fold jump in days too hot for Monarchs. Rising temperatures may result in drastic changes to monarch range and timing here in Indiana.

Fortunately, the news isn’t all bad! Monarchs are masterful fliers. They can be found throughout their native range of North America and have successfully established populations across Australia, New Zealand, and Hawaii. This expansive range helps ensure their persistence, even in the face of localized extreme weather events. Monarchs demonstrated that principle this year. Even though they were seen less frequently in the Midwest, both the eastern and western migratory monarch populations enjoyed increases over 2021. Counts of the overwintering eastern population showed a modest increase of 35%. However, in counts of the overwintering western monarch population, there was an astounding increase of 1250%. While current monarch populations are still less than 20% of what they were in the 1990s, these recent increases are encouraging and could indicate restoration efforts are having a beneficial effect.

To support monarchs in your home garden, plant milkweed. Though monarch caterpillars will readily feed on a variety of milkweed species, native, drought-tolerant milkweeds beautify your garden and support monarchs while needing less water, fertilizer, or insecticide. This is practical both for Indiana’s occasionally dry summers and because avoiding insecticides is crucial. Many insecticides can linger on or within the plant tissues and pose a grave risk to monarch health. When purchasing plants, ensure they have not been treated with caterpillar-killing insecticides, and avoid using insecticides on plants in your garden.

MILKWEED PLANTS

Common name	Scientific name
Butterfly milkweed	<i>Asclepias tuberosa</i>
Common milkweed	<i>Asclepias syriaca</i>
Poke Milkweed	<i>Asclepias exaltata</i>
Whorled Milkweed	<i>Asclepias verticillata</i>

Figure 3. Milkweed species that support monarch populations in Indiana.

Milkweed plants free from toxic chemicals provide food for monarch caterpillars and a place for monarch butterflies to lay

eggs and feed on nectar. Though the caterpillars are picky eaters, monarch butterflies are not. They can use nectar from a wide variety of plants, not just milkweeds. Consider adding a variety of flowering plants which bloom throughout the spring, summer, and early fall to your monarch garden. Providing nectar across these seasons ensures the adults have access to food while breeding, preparing to migrate, and during their migration. Hint – adults show a preference for orange and yellow blossoms! [Here](#) is a helpful table of additional pollinator plants that includes flowering color and season so you, too, can have a garden fit for a monarch.



Figure 4. Monarch egg on milkweed. Photo by John Obermeyer, Purdue Extension Entomology.

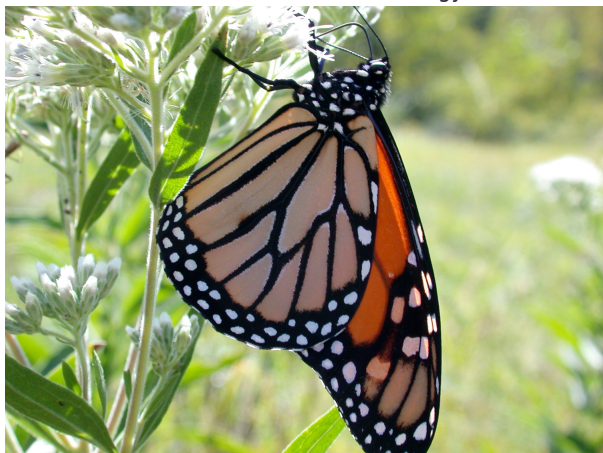


Figure 5. Monarch butterfly feeding on nectar. Photo by John Obermeyer, Purdue Extension Entomology.

Cover Photo. Monarch butterfly on common milkweed pods. Photo by John Obermeyer, Purdue Extension Entomology.

Free Early Pest Detector Workshop

(Cliff Sadof, csadof@purdue.edu)

Learn how to protect Indiana from invasive species at a free workshop. Professor Cliff Sadof of Purdue University and Carrie Tauscher, Arboretum Director of the Crown Hill Heritage Foundation will show you the best way to look for and report invasive species and provide a chance to practice reporting on the Crown Hill Grounds.

Whether you're a master gardener, professional forester, or a concerned citizen, you will learn something about Indiana forest pests. Open to all ages.

Arborist CEUs and Pesticide Certification Available.

Space is limited Register today at <https://tinyurl.com/ByeBadBug>

Questions@ contact csadof@purdue.edu

Workshop Location

Crown Hill Funeral Home, Celebration Hall

700 West 38th Street Indianapolis, IN 46208

Help Fight Invasives








FREE Workshop At Crown Hill Funeral Home, Celebration Hall
 700 West 38th Street, Indianapolis, IN 10 AM – Noon October 12, 2022
 CEUs available Register today!
<https://tinyurl.com/ByeBadBug>

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