



Photo 1: *Vinca minor*, *Pachysandra* (in photo), and various ivys can provide excellent groundcover for landscapes in Michigan, avoiding the need for high maintenance of lawns.



Photo 2: Without doubt, *Phoma* stem blight is the most common and serious disease encountered on *Vinca*. The disease is favored by high moisture conditions. The blackened stem and subsequent girdling of the plant in this photo represents attack by *Phoma*. Pycnidia of the fungus are visible on the stem.



Photo 3: With advanced *Phoma* attack, *Vinca* tends to die out in patches, likely representing the clonal growth habit of *Vinca*. Continued *Phoma* attack, favored by abundant moisture, may devastate large beds of *Vinca*.



The Plant Doctor's LANDSCAPE TIPS

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PHOMA STEM BLIGHT OF VINCA

INTRODUCTION:

Vinca minor, also sometimes known as ground myrtle, creeping myrtle or periwinkle, is one of several widely utilized ground covers in Michigan landscapes (Photo 1). The plant tends to spread and produce "clonal" colonies of "evergreen" groundcover that rarely, if ever, exhibit climbing characteristics. The production of pretty violet, purplish flowers in the early spring through midsummer, with some flowers persisting into the fall season, makes it a highly sought after groundcover by some property owners and landscapers. The plant has become naturalized in many states where it is often considered highly desirable and, occasionally, invasive. Probably the greatest threat to the health of periwinkle and its close relative, *Vinca major*, is Stem Blight caused by the fungus, *Phoma exigua* var. *exigua* (referred to in this article simply as "*Phoma*").

DISEASE SYMPTOMS AND CYCLE:

Phoma may live as a saprophyte, spreading via mycelium (fungal strands) through the soil and/or mulch. If conditions are conducive, the fungus may enter into a pathogenic phase and attack *Vinca* by first colonizing stems. The fungus may also cause leaf spots and "blight" symptoms on *Vinca* foliage. In general, the fungal attack on the stem causes that entire portion of that plant to turn black and necrotic (Photo 2). Further advance of the disease through the bed may cause pockets of dead plants in the ground cover bed (Photo 3). The fungus is typically favored by cool, moist conditions during the spring and fall, conditions that may also exist at other times during a typical summer in Michigan.


Phoma may survive the winter as fungal strands or as spores in pycnidia (tiny reproductive structures analogous to "mushrooms"). The fungus typically resumes growth in the spring and, if conditions are favorable, may attack plants. Pycnidia are often produced on blackened stems and are visible, especially with a magnifying device. During moist conditions, such as precipitation or irrigation, thousands of spores are released from the pycnidia. These spores are capable of being splashed to nearby healthy plants where plant attack and fungal reproduction are repeated.

MANAGEMENT OF PHOMA STEM BLIGHT OF VINCA:

When contemplating management of stem blight on *Vinca*, it is important to diagnose the problem and distinguish *Phoma* from other possible incitants such as *Rhizoctonia* stem and root rot. Other than the production of pycnidia (described above) this strain of *Phoma* has a rather limited host range (*Vinca* sp.); *Rhizoctonia* is capable of attacking many other herbaceous plants and produces no pycnidia. In the author's estimation, landscapes that receive high maintenance (frequent irrigation) can expect *Phoma* to be a

common visitor ... perhaps greater than 90% of the *Vinca* dieback problems in Michigan can be attributed to *Phoma*.

Cultural: When establishing new beds, avoid purchasing plants that exhibit symptoms (even slight) of stem blight or dieback. On established beds, *Phoma* stem blight can be managed to a great extent by irrigation management (infrequent)-*Vinca* does not require much irrigation during most Michigan growing seasons. Because *Phoma* can survive indefinitely in soil, *Vinca* may need to be replaced by another groundcover if stem blight has reached epidemic levels.

Fungicides: Many fungicides can be employed to help minimize *Phoma* activity. Some of these fungicides include chlorothalonil, mancozeb, copper fungicides, thiophanate methyl, etc. However, the efficacy of fungicides will largely be negated by frequent moisture. In the author's opinion and experience, *Phoma* is especially sensitive to the benzimidazole class of fungicides (ex. thiophanate methyl, etc.), which can be used as treatments to help *Vinca* recover from serious attacks by *Phoma* during high moisture conditions. Drenches with fungicides may be particularly effective during the spring, when a single drench may suffice for long-term management provided moisture is minimized. In the author's opinion, fungicides should be utilized only rarely to manage this disease. 

WITCHES' BROOM

INTRODUCTION:

This article is not about Halloween or early American witch hunts, which may still take place to this day, albeit under different guises. Witches' Broom (WB) is actually a rather formal term used in several scientific disciplines to describe symptoms of broom-like growth or a group of shoots and buds in close proximity (Photo 1). This proliferation of buds or shoots that comprises a Witches' Broom may seem to have originated from a point source.

The existence of WB may be symptomatic of potentially serious issues on the patient tree or shrub ... or, WB may signify problems that are not very serious at all. WB may be caused by numerous instigators.

CAUSES OF WITCHES' BROOMS

When we ponder the causes of WB, we must remember that the symptoms of WB can be initiated by anything that affects apical dominance in plants. In other words, anything that harms or kills or affects the apical dominance of a shoot or branch will automatically stimulate a proliferation of lateral shoots. Repeated offenses exacerbate the WB symptoms. Following are some common causal examples of WB.

Diseases: Any infectious disease that results in damage to plants may stimulate WB. Some of the more common ones include canker fungi and diseases such as anthracnose (Photo 2). Even the innocuous powdery mildew has been shown to cause WB. The very common WB on a native tree such as hackberry, for example, makes it somewhat undesirable as a landscape tree; the WB on hackberry is believed to be caused by powdery mildew acting in conjunction with an eriophyid mite.

Pests: A variety of pests can cause WB. Shoot/stem borers, twig girdlers and any other of an endless supply of pests that may affect apical dominance may cause the symptoms of WB (Photo 3).

Deicing Salts: Windblown road salt is one of the more commonly seen causes of WB (Photo 4A). The symptoms of deicing salts are more readily visible during the dormant season rather than the growing season (Photo 4B).

Pruning: Anytime a tree or shrub is pruned, a natural response of the plant is to stimulate lateral growth to compensate for the loss of apical dominance. Proper pruning techniques will minimize the proliferation of shoots. The unprofessional practice of "topping" stimulates WBs.

Chemicals/Herbicides: Many chemicals can induce WB, even insecticides and fungicides. And because many herbicides are growth regulators (think effects on apical dominance), they may also cause symptoms of WB.

MANAGEMENT OF WITCHES' BROOMS

Obviously, diagnosing the cause of the WB on a particular plant will be necessary to avert any potentially serious decline/death and to determine whether control measures are necessary or warranted. Regardless of the cause of WB, the symptom of proliferation of shoots may not only make plants aesthetically displeasing, but may also contribute to other damage such as accumulation of ice and snow loads. The accumulation of ice and snow may lead to branch failure, or, in some cases, whole tree failure. 📌

For more information, please feel free to email David Roberts at robertsd@msu.edu or contact a professional plant health care provider. The author, MSU and MGIA do not endorse any particular products. If using pesticides, be sure to read and follow label directions.



Photo 1: The symptoms of Witches' Broom are characterized by a proliferation of shoots in close proximity. The causes of Witches' Broom may be many.



Photo 2: Diseases such as Anthracnose on certain species of trees and shrubs may result in symptoms of Witches' Broom. The American Sycamores on the left have been defoliated by WB, but also possess numerous WBs due to activity of the fungus. A related species of tree on the right (London Planetree) is less susceptible to anthracnose and does not typically develop WB.



Photo 3: Shoot borers and other pests are known to stimulate Witches' Broom. In this case, Two-lined Chestnut Borer is causing the proliferation of adventitious shoots on oak.



Photo 4A: Road (deicing) salt is a common contributor to Witches' Broom, which is usually more visible during the dormant season.



Photo 4B: This is the same location as Photo 4A, showing that foliage during the growing season may help to mask the symptoms of WB. Nevertheless, these trees are deformed due to WB.