



# The Plant Doctor's LANDSCAPE TIPS

By David L. Roberts, Ph.D., *Senior Academic Specialist,*  
*College of Agriculture and Natural Resources, Michigan State University*

## TRELLIS RUST: A MANAGEMENT UPDATE



**Photo 1**

**Photo 1:** This photo of TR was taken in July of 2015. The severe debilitating effects of the disease are readily visible and have resulted in apparent decline of the trees.



**Photo 2**

**Photo 2:** This photo of the same three trees was taken approximately one year later in 2016. It shows that the trees have rebounded somewhat. These three trees were injected with Shepherd by Arborsystems Wedgle in the early spring of 2016. While this may be anecdotal, there is evidence that severely declined trees may exhibit some recovery. Obviously, it would be better to prevent severe decline from happening in the first place if we want to maintain relatively healthy pear trees in the landscape; we might be able to accomplish this with reasonable management steps.

### INTRODUCTION:

Trellis Rust (aka European Pear Rust), caused by the fungus *Gymnosporangium sabinae* (= *Gymnosporangium fuscum*), has spread throughout Southeast Michigan. Originally from Europe, the disease may represent a serious health threat to *Pyrus* species, both ornamental and fruit pear types. Symptoms and the disease cycle were summarized in two previous *Landscape* articles: September 2014 and September 2015 issues. The disease will likely advance across Michigan in the next few years. We have little experience with the control of Trellis Rust, but through observations over the last couple of years combined with our knowledge of similar diseases, I believe I can provide some practical measures that arborists/landscapers may consider in their management plans. After witnessing severe decline from TR (Photo 1) and subsequent moderate recovery (Photo 2), I am optimistic that TR may be managed sufficiently to maintain pear trees in many landscapes if appropriate practices are implemented.

### DISEASE CYCLE IN BRIEF:

To properly manage Trellis Rust (TR), it is important to understand the disease cycle. The TR fungus overwinters as galls on various types of juniper plants. During the warming, damp weather of spring, the galls explode into highly visible, perhaps ornate,



**Photo 3**

**Photo 3:** Visible in the spring, this rust gall on juniper appears to have landed from outer space. Full grown, macho men have been known to run screaming from these space capsules to avoid being taken away. Many people claimed to have experienced such alien abduction. Note: it may be difficult to distinguish TR galls from other rust galls such as "cedar-apple rust."

*Continued on page 10*





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Photo 4

**Photo 4:** At the same location as in Photo 1 & 2 and formerly missed by the author in previous years, these TR galls (Inset) were deeply imbedded and virtually inconspicuous in the low junipers beneath these crabapples.



Photo 5A



Photo 5B



Photo 5C



Photo 5D

**Photo 5A-5D:** Infection on pear leaves in the spring initially results in yellow lesions (5A) this many infections will likely result in leaf death and death of the fungus. Fewer infections will permit survival of the foliage (and fungus), with spots enlarging and becoming reddish-orange (5B). Later, the leaflets and petioles often become grotesque in appearance (5C). These mini volcanoes erupting from the underside of leaf lesions (5D) in the fall (mid-September to early October) release spores that infect the junipers, completing the disease/life cycle of the fungus.

Continued from page 9

“flowers” that appear to have come from “outer space” (Photos 3 & 4). These juniper “flowers” release spores that infect the newly emerging leaves of pear. After infection of pear leaves, yellow spots appear in several weeks (Photo 5A). These spots mature and enlarge throughout the summer and eventually become reddish-orange (Photo 5B). Often, the leaves and their petioles become grotesque in appearance by mid to late summer (Photo 5C). By late September to early October, small eruptions appear on the bottom surface of the leaf lesions (5D); these mini volcanoes release spores that infect junipers, thus initiating the overwintering stage and completing the cycle.

#### MANAGEMENT OPTIONS:

There are a variety of approaches to managing Trellis Rust. Specific management options may be better in some situations than other management options.

**Alternative Plants:** Because ornamental pear (*Pyrus calleryana*) was a mainstay replacement for ash trees after the Emerald Ash Borer disaster, the tree has been overplanted. Use of other genera of trees would be well advised. For example, linden and Katsura are a couple of trees that would grow well where pears grow and are immune to Trellis Rust. Various conifers exhibiting immunity to TR, such as arborvitae and its varieties/cultivars, may represent good replacements for TR-susceptible junipers.

**Cultural Practices:** Irrigation mist and precipitation at the time of spore release from junipers in the spring greatly increases the incidence of leaf and twig infection on pear by TR. Minimizing irrigation might help reduce the number of infections. Moderate fertilization may help affected pears to recover from severe infections.

**Separation Anxiety:** TR requires two host plants to complete its life cycle and to survive. The lack of one host plant will eliminate (some to most) TR from the landscape. This notion is a particularly powerful management tool. The problem is that people prefer junipers or pear trees or both in the rather confining spaces of the urban environment. A distance of 100 feet or less between pear and juniper will likely result in abundant TR infections and potentially severe dieback. The separation of these two plant by 100 yards will significantly reduce the number of infections. Separation by a quarter to half mile will reduce the number of infections even more. The fewer the number of infections, the healthier the pear trees will be (Junipers are generally not severely affected by TR).

**Eliminating Juniper Galls:** Where feasible, the pruning of TR galls from juniper may be somewhat effective. As noted in





Photo 6

**Photo 6:** Infections by TR of pear foliage takes place at the time of flowering, typically in late April to early May, depending on the year. Applications of fungicides (or insecticides) during this time to control TR or other problems can harm bees.

a previous article however, the galls can be quite small and/or undetectable (Photos 3 & 4). The galls may also appear differently on different species/types of junipers. After following this site near Livonia for more than two years, I noticed this bed of junipers near some crabapples (near the pear trees). TR galls were hidden deep within the canopies and was not visible by casual observation (Photo 4).

**Fungicide Treatments:** Fungicides have the potential to inhibit or minimize infections. Timing is critical. For example, spores are released from juniper for infection of pear during a two-three-week period in late April to early-mid June, at least according to observations over the past couple of years. Fungicides should ideally be applied before spore release and infection. Application of fungicides after infection has taken place will be useless. Fungicides can also be applied to junipers to protect them from infection in the fall, typically late September to early October. Fungicides can be applied by cover sprays or by trunk injections (Photo 2). Sheryl Hockney and Gary Eichen from Mike's Tree Surgeons reported fairly good success with a mixture of fungicides, Thiophanate-Methyl and Chlorothalonil, and Propiconazole and Chlorothalonil. Triadimefon (Bayleton) may work as well but is more expensive.

In regards to pesticides, we need to be more concerned about effects upon the pollinator (bee) populations. TR spores are released from junipers to infect pear foliage at the approximate time of flowering, when bees are visiting flowers to collect nectar (Photo 6). Even many of the fungicides have been shown to exhibit toxic effects to bees.

**Preach Tolerance:** Our society has become too expectant of a pristine environment with no pests or diseases problems



Photo 7

**Photo 7:** Pear trees have some nice (and negative) attributes; they tend to grow well in poor soil conditions like ash and exhibit brilliant flowering in the spring. Because TR does not affect flowering to any appreciable extent, unless the tree is severely declined, we should be able to tolerate some rust lesions on the foliage in our environmental stewardship efforts.

on their landscape or garden plants. Even with applications of numerous pesticides, it is highly unlikely we can ever achieve perfection. The importance of pollinators and other environmental concerns should make us realize the diminishing returns of excessive chemical inputs. In the case of TR, I have come to realize, as with many other issues in our environment, that pear trees can survive just fine with some lesions on the foliage. If we can assume some tolerance, the bees and our environment (and us) will be far happier and healthier (Photo 7). 📌

*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.*

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