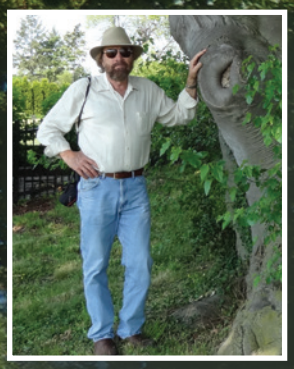
# An Oak Wilt Review

# Woodstock, Whack-A-Mole,



BY DR. DAVID L. ROBERTS,
THE PLANT DOCTOR, LLC

Dr. Roberts retired from Michigan State University in 2018 after committing four decades to advancing MSU's Land Grant Mission, originally signed into law by President Abraham Lincoln during the midst of the American Civil War. He has published hundreds of articles and has taught hundreds of lectures and workshops.

Dr. Roberts has researched many issues in Michigan's plant industry, including Oak Wilt, Dutch Elm Disease, Diplodia Tip Blight of Pines, along with a variety of cultural problems such as plant nutrition and herbicide toxicity. During his career, he has discovered a variety of new diseases and pests such as Phomopsis Canker of Spruce and the first bacterial wilt disease of turfgrasses in North America.

In the early 2000s, his research on Ash Decline in Southeast Michigan led to the discovery of the invasive Emerald Ash Borer in North America.

(248) 320-7124
Email: treedoctordave@gmail.com

# for 2023:
# and Other Ramblings

INTRODUCTION:

Oak Wilt seems to be gaining ground every year in Michigan (Photos 1A & 1B). Is it really increasing in prominence or are people just becoming more aware of the disease? This past year, 2023, was very interesting from a variety of standpoints. I thought it might be useful to share some of my experiences and perhaps plant professionals in our industry could benefit from my field observations and research. First, let me suggest that even though I have worked on Oak Wilt for nearly 40 years, I learn something new practically every time I visit an Oak Wilt site and/or review some of my field research. Hence, there is still plenty to be discovered about this deadly disease that continues to threaten the health of a major component of Michigan's forests, whether natural or urban. So what does Woodstock and Whack-A-Mole have to do with Oak Wilt? To find out, please read on.

**P1**A

**P1 A&B** Oak Wilt occurs throughout Michigan. This Oak Wilt epicenter is expanding on the shores of Lake Michigan. Photo 1A is a view of Oak Wilt looking inland while Photo 1B is a view of the same Oak Wilt infection looking out to Lake Michigan. This Oak Wilt outbreak will be particularly challenging to control because of its location on Critical Dunes. Destructive control measures such as Root Graft Disruption (trenching) would not be permitted. Promiscuous destruction of healthy trees to control Oak Wilt would likely be as destabilizing for the dunes as trenching. This location deserves Oak Wilt remediation methods that have little impact on the surrounding ecosystem.


For those readers who are new to Oak Wilt, I'll skip a protracted review of its biology, diagnosis, and management in the present publication. These issues have been covered in previous articles published in *The Michigan Landscape.* These articles are available in electronic format from Jennifer Dwyer (jen@mnla.org) or me (treedoctordave@gmail.com). A brief list of those pertinent articles for review are as follows.

### ***The Michigan Landscape*** **Oak Wilt Publication References:**

#1: *Oak Wilt Part 1: Symptoms, Biology and Diagnosis.* Jan/Feb 2016. Pgs. 43-46.

#2: *Oak Wilt Part 2: Prevention and Management Strategies.* Mar/Apr 2016. Pgs. 44-47.

#3: *Oak Wilt Part 3: Tales of Horror.* Mar/Apr 2017. Pgs. 46-51.

#4: *Can Glyphosate Stop Oak Wilt?* July/Aug 2018.Pgs. 33-37.

#5: *Oak Wilt Remediation by Tier Tree Model Part 1: Root Graft Disruption.* Mar/Apr 2020. Pgs. 39-45

#6: *Oak Wilt Remediation by Tier Tree Model Part 2: Tree Injections.* July/Aug 2020. Pgs. 32-39.

#7: *Oak Wilt Remediation by Tier Tree Model Part 3: The Glyphosate/Stump Cup Technique.* Sept/Oct 2020. Pgs. 39-46.

#8: *Promising Variations of the Glyphosate/Stump Cup Technique: 'Chaser' and 'Half Moon'.* Sept/Oct 2021. Pgs. 51-57.

#9: *A Review of Oak Wilt Management Options: Introducing the Oak Wilt Remediation Kill Ratio.* Mar/Apr 2022. Pgs. 42-49.

#10: *Oak Wilt Interactives: Matters That May Be Mistaken for or Interact with Oak Wilt.* Sep/Oct 2022. Pgs. 41-47.

#11: *Oak Wilt Management and Ethics: Research and Experiences from the Field.* Mar/Apr 2023 Pgs. 51-60.

## Is Oak Wilt Controllable? Eradicable?

I think everyone associated with our industry, whether they be from one of the several plant societies or from state governmental departments, possesses the well-intentioned goal of suppressing or even eradicating Oak Wilt from our state. The basic problem is how do we accomplish that task? Realistically, I think it will be impossible to eradicate Oak Wilt from Michigan; the disease is too embedded in this state's landscape. And the divergence of methods in dealing with Oak Wilt is daunting. There are a variety of reasons for our noble mission's likely failure.

**Ignorance about Oak Wilt:** I can't believe how many Michiganders inform me they have never heard of Oak Wilt before. Is it our industry's deficiency that many Michigan residents don't know more about Oak Wilt? I know I take every opportunity I can to educate our prospective clientele about Oak Wilt (see "Woodstock" ahead). In September, I conducted an Oak Wilt field tour of a 150-home homeowners association; attendees had difficulty with picking out the Oak Wilt-infected tree in Photo 2 (arrow). On the tour, we discovered several new Oak Wilt epicenters that residents didn't know were caused by this lethal disease. As an industry, I think we can do better at informing our customers about the seriousness of Oak Wilt. I know I try to preach about Oak Wilt whenever I get the opportunity, perhaps to some people's ad nauseum.

**OWA=Oak Wilt Apathy:** There's a newly discovered disease in Michigan known as Oak Wilt Apathy. The most serious symptom expression is that residents do not care about dying Oak trees on their *own* property. Or they look at Oak trees as firewood, dead or not. Less acute symptoms indicate the following belief, "It's not my problem,




**P2** People unfamiliar with Oak Wilt seem to have difficulty in understanding what to look for when considering whether they have Oak Wilt. While leading an Oak Wilt field tour through a 150-home association in September, attendees kept asking which tree I thought had Oak Wilt. I explained that if they are not familiar with the identification of Oak Wilt, dead or declining trees are likely the first evidence of Oak Wilt for them, further explaining that leaf drop is very common as an initial symptom. Note declining Oak Wilt-infected trees practically devoid of foliage (center left) and healthy-appearing trees (right).

**P3 A&B** Emily and her boyfriend discovered Oak Wilt near their new home construction. The Oak Wilt Qualifier Program specified destroying all trees in Photo 3A (and more) by implementation of the DNR/Bruhn Model. Emily sought my assistance to save her trees. We also discovered an expanding epicenter of Oak Wilt only a quarter mile away but on a farmer's property (Photo 3B). Because the farmer planned to do nothing about Oak Wilt, he gave Emily permission to try eradicating the disease from his land via implementation of the Glyphosate/Stump Cup Method. It is these types of Oak Wilt outbreaks in the middle of nowhere that serve as infection centers for the Overland Spread of Oak Wilt to other people's properties, making suppression or eradication of Oak Wilt virtually impossible.

so why should I care?" As the disease progresses, symptoms include the need to destroy as many trees as possible to stop Oak Wilt. I'm optimistic that the drug companies will come up with a cure for OWA in tablet form within the next few years. When people learn about Oak Wilt, it is not uncommon for me to witness extremes in their reactions. Some individuals panic and want something done immediately, even prompt removal of infected trees, which is the wrong approach and will likely result in more rapid spread of the disease. This past year, I assisted Emily, a property owner, with advice on her Oak Wilt dilemma. I featured Emily's Oak Wilt situation in my article *Oak Wilt Management and Ethics* (Reference #11). On my way to her home in the country to reexamine our Oak Wilt eradication efforts (discussed elsewhere in this article), I noticed a group of dead trees only about 1/4 mile away but along a wooded area near a wetland and some distance from the road. Upon further inspection, we discovered an expanding Oak Wilt epicenter, but it was on her neighbor's property (Photos 3A & 3B). This expanding epicenter was likely the source of infection for Emily's Oak trees via Overland Spread. When she informed the neighbor farmer about his Oak Wilt epicenter, he didn't care and planned to do nothing about it. Because Emily was worried about her trees and those trees in the entire neighborhood, she asked the farmer if he minded if she would assume remediation of his Oak Wilt epicenter. He responded she could do whatever she wanted. ***"Like a good neighbor, Emily is there."***

Last summer I was asked by Vivian, a property owner in a rather affluent neighborhood (Photo 4A), to assist her to resolve her Oak Wilt problem. When I informed her that approximately half of the homes in her association had Oak Wilt, she became very alarmed and contacted the President of the HOA. The President, an attorney, finally responded to Vivian that every homeowner in the community is responsible for their own Oak Wilt issues (Photo 4B). Implementing any Oak Wilt management procedures in this neighborhood could be daunting.

**Diversity of Management Options:** Nothing promotes apathy more than high costs and destruction of trees and property values, often resulting in gridlock and indecision. The costs and impacts of various management options on people's properties and their pocketbooks are quite variable. For example, depending on which "Expert" Michiganders contact, the costs for controlling Oak Wilt might range from a few hundred dollars to many $10,000s, even for remediation of the same site. I reviewed the most common management options in Reference #9 *(A Review of Oak Wilt Management Options…)*. As an industry, we need to present all management options, especially those that are pragmatic, so that property owners can make the best decisions that fit their goals and budget; by doing so, we can elicit the public's help to address the Oak Wilt debacle in Michigan. Some entities and individuals are advancing only those options that are costly, destructive, and detrimental to local ecosystems; these individuals seem to have an agenda that is not in the best interest of arboriculture and the public.


P4A


P4B

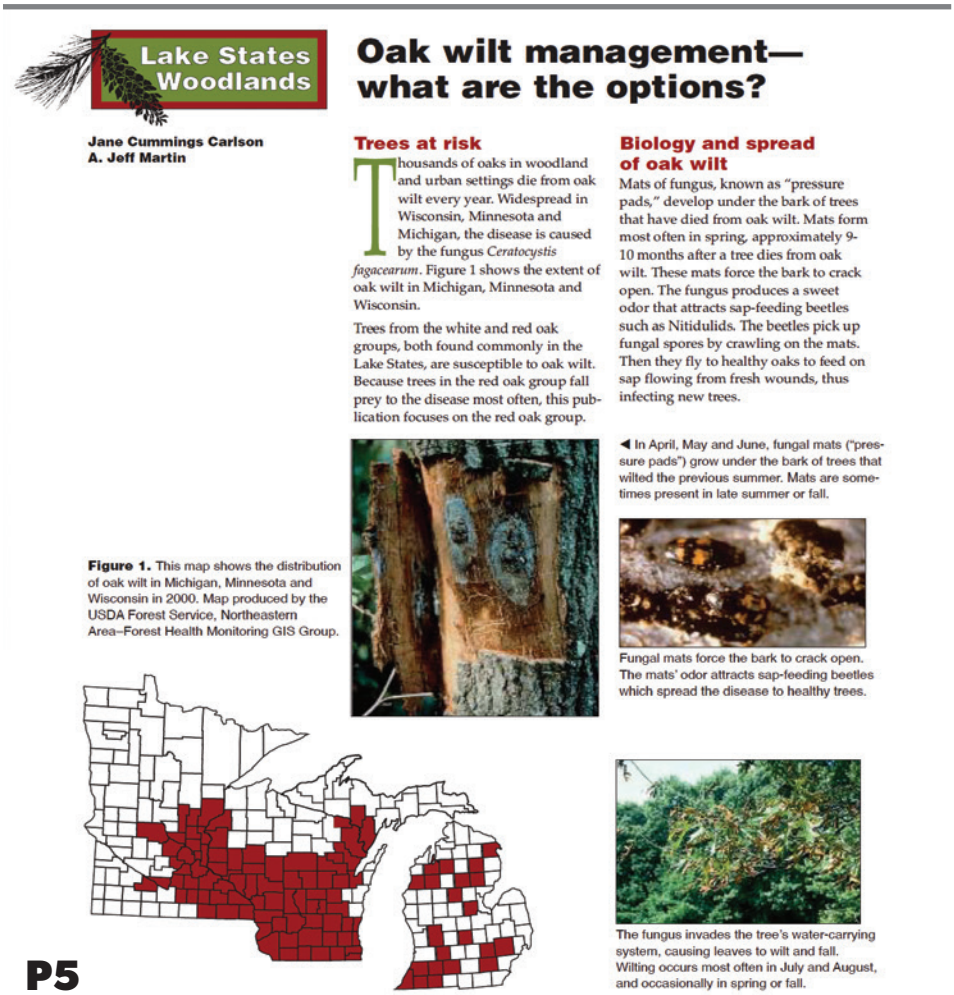
P4 A&B Vivian, who lives in an affluent community, asked me to visit her property where she believed she had Oak Wilt, asking me for advice on management of the disease. In Photo 4A, a tree affected by Oak Wilt is barely visible (arrow). In examining the neighborhood, I estimated that Oak trees on about half of the properties were affected by Oak Wilt (4B center right). This revelation was a very sobering moment for Vivian who wanted to do everything possible to save the community's ecosystem. But the President of the HOA, an attorney, simply responded that Oak Wilt is an individual homeowner's responsibility.

## Herbicide Remediation of Oak Wilt:

There are a variety of Oak Wilt control measures available, ranging from Root Graft Disruption techniques to Tree Injection Systems with fungicide (propiconazole) to Herbicide Applications in various protocols… and their variations. For many, if not most, of the Oak Wilt

outbreaks in Michigan, herbicide treatments, if effective, could offer the most potential for cost effective and environmentally friendly solutions available for Oak Wilt Management. In review of the literature involving herbicide applications for Oak Wilt management, it is astonishing how many research studies test herbicides that just can't provide the necessary efficacy for Oak Wilt Control. Dr. Jane Cummings Carlson (Wisconsin DNR), et.al., makes a valiant attempt at reviewing herbicide treatment efforts by scientists for control of Oak Wilt in the University of Wisconsin Extension Publication (G3590) (Photo 5). What I like most about this publication is Dr. Carlson's (et.al) attention to herbicide research. Herbicides that have been tested by various scientists in the Midwest according to this publication include Garlon 3, Garlon 4, Arsenal AC, Stalker, and Tordon RTU. Dr. Carlson reported that while some of the herbicides were capable of killing the above ground portions of Oak trees, none were effective at killing the roots of Oak trees quickly enough to prevent the spread of Oak Wilt through root graft transmission. Hence, none of these herbicides are likely to stop Oak Wilt transmission via root grafts! What is even more astonishing is that most research studies I know of have never tested Glyphosate. I'm not sure why that is but according to 'chat' on social media, many arborists and foresters apparently believe Glyphosate is not capable of killing trees and other woody plants. There seems to be an addiction for triclopyr usage in forestry, which is probably why the Michigan DNR has adopted Garlon 4 for its treatment of Oak Wilt using the destructive Bruhn Model with a double girdle method in lieu of Root Graft Disruption. My experience is completely in opposition to these sentiments. In my research, Glyphosate is not only capable of killing Oak trees to stop Oak Wilt spread but the herbicide is effective at killing Oak trees with as little as one teaspoon (~5mL) per 12" dbh.

I have been experimenting with Glyphosate applications with my "Stump Cup" (=Frill Cut) in Oak trees since 2008. The procedure is implemented by making



Lake States Woodlands

## Oak wilt management—what are the options?

Jane Cummings Carlson
A. Jeff Martin

### Trees at risk

Thousands of oaks in woodland and urban settings die from oak wilt every year. Widespread in Wisconsin, Minnesota and Michigan, the disease is caused by the fungus *Ceratocystis fagacearum*. Figure 1 shows the extent of oak wilt in Michigan, Minnesota and Wisconsin.

Trees from the white and red oak groups, both found commonly in the Lake States, are susceptible to oak wilt. Because trees in the red oak group fall prey to the disease most often, this publication focuses on the red oak group.

### Biology and spread of oak wilt

Mats of fungus, known as "pressure pads," develop under the bark of trees that have died from oak wilt. Mats form most often in spring, approximately 9-10 months after a tree dies from oak wilt. These mats force the bark to crack open. The fungus produces a sweet odor that attracts sap-feeding beetles such as Nitidulids. The beetles pick up fungal spores by crawling on the mats. Then they fly to healthy oaks to feed on sap flowing from fresh wounds, thus infecting new trees.

◀ In April, May and June, fungal mats ("pressure pads") grow under the bark of trees that wilted the previous summer. Mats are sometimes present in late summer or fall.

Fungal mats force the bark to crack open. The mats' odor attracts sap-feeding beetles which spread the disease to healthy trees.

**Figure 1.** This map shows the distribution of oak wilt in Michigan, Minnesota and Wisconsin in 2000. Map produced by the USDA Forest Service, Northeastern Area–Forest Health Monitoring GIS Group.

The fungus invades the tree's water-carrying system, causing leaves to wilt and fall. Wilting occurs most often in July and August, and occasionally in spring or fall.

**P5** This University of Wisconsin Extension Bulletin (G3590) by Dr. Jane Cummings Carlson and colleagues does a credible job of summarizing much of the research done by scientists for the remediation of Oak Wilt, especially regarding herbicide. As she explains, several common herbicides (Garlon 3, Garlon 4, Arsenal AC, Stalker, and Tordon RTU) have been tested by various scientists. She relayed that several of these herbicides were capable of killing above ground portions of Oak trees, but none were believed to impact roots sufficiently quickly to prevent Oak Wilt transmission through root grafts. It is interesting that Glyphosate is generally not tested because it is believed to be incapable of killing woody plants, a conclusion I find at odds with my research and experience.

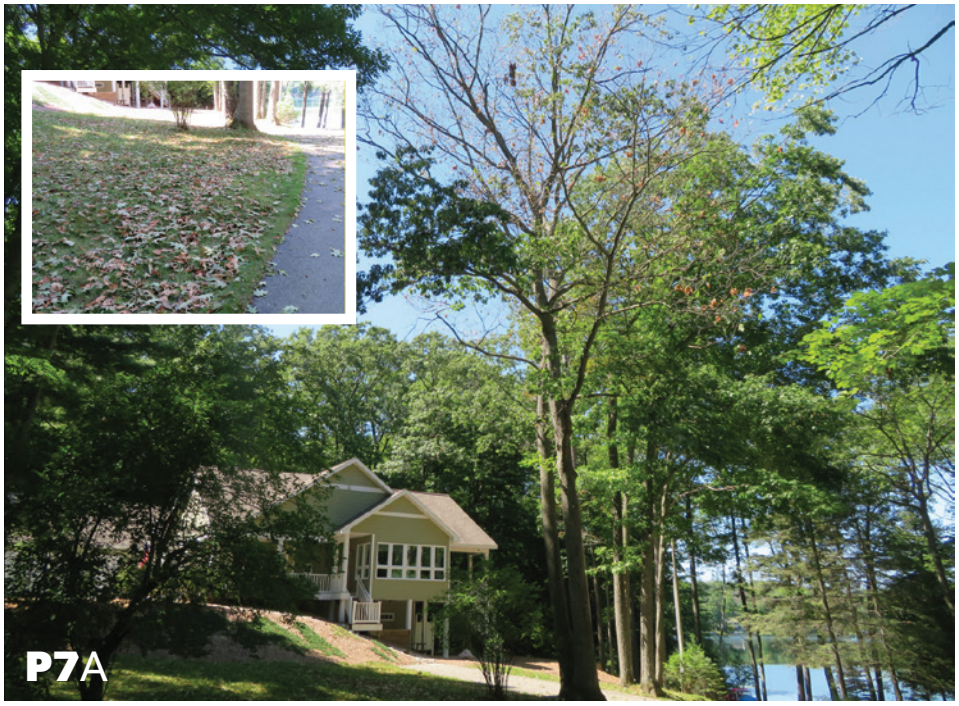
**P6** Implementation of the author's Glyphosate/Stump Cup is quite simple and involves making a shallow girdling cut at a downward angle to create a "cup". Glyphosate is poured into the cup where it is generally absorbed by the tree's vascular system very quickly. Note pooling of Glyphosate in Photo Inset. The function of the twig is to dam up the Glyphosate so that the herbicide does not escape the cup in slightly low areas in the not-quite-level stump cup.

a circumnavigating, shallow girdling cut at a downward angle on the tree trunk and then applying concentrated Glyphosate to the "cup" (Photo 6). Beginning with the Tier Tree Model and the Glyphosate/Stump Cup, the procedure has morphed into three different procedures as described below.

**Glyphosate/Stump Cup 'Tier Tree Model':** The 'Tier Tree Model' of the Glyphosate/Stump Cup prescribes that a tier (or two) of healthy trees surrounding an infected oak tree or epicenter is sacrificed by implementation of the Glyphosate/Stump Cup Technique. To my knowledge in the research with which I have been engaged, this technique has never failed to contain and eradicate Oak Wilt from a site. For some individuals, its main drawback is the sacrifice of a few healthy Oak trees surrounding an "epicenter" of Oak Wilt-afflicted trees. However, that sacrifice pales in comparison to the most costly and destructive DNR/Bruhn Model promoted by certain entities and individuals through the Oak Wilt Qualifier Program. Good summaries are presented in References #9 *(A Review…)* and #11 *(Oak Wilt… Ethics)*.

**Glyphosate/Stump Cup 'Half Moon' Model:** With this technique, a half girdling (Half Moon) Stump Cup is made instead of the full circumference girdling cut. Whether applied to a tier of healthy trees surrounding an Oak Wilt epicenter or to Oak Wilt-infected trees, the goal of this model was to theoretically send systemic Glyphosate in the direction of the advancing Oak Wilt epicenter or away from healthy trees to prevent collateral damage to trees that are destined for preservation. While this method has not been field tested for Oak Wilt control, it has proven to be extremely valuable in experimental field trials that show that Glyphosate is far more effective than Triclopyr (Garlon 4) (and other herbicides) at killing Oak trees, which infers stopping the transmission of Oak Wilt fungus through root grafts.

**Glyphosate/Stump Cup 'Chaser':** In a third variation of the Glyphosate/Stump Cup technique, I experimented with administering Glyphosate to ***Infected Oak Trees Only***. In field trials at actual Oak Wilt sites, the Glyphosate seems to translocate through roots and root grafts much faster than the Oak Wilt fungus does. Hence, the name 'Chaser'. The herbicide "chases down" the Oak Wilt fungus and passes it within the systemic vascular system of the ***Infected Oak Tree;*** even in those oak trees that have





**P7 A&B** Several years ago, at this lakefront property in northern Michigan, a lone Oak tree became infected by the Oak Wilt fungus via Overland Spread to a small, wounded branch (Photo 7A - note copious leaf drop - Inset). An OWQ arborist recommended the DNR/Bruhn Model, which would have resulted in the destruction of all Oak trees on the property and many Oak trees on neighbors' properties, even Oaks on properties across a paved road. A neighbor, who happened to be a friend of mine and retired arborist, recommended I be brought in for advice. The application of my Glyphosate/Stump Cup 'Chaser' method resulted in no further spread of Oak Wilt during the last three years, even the relatively short distance of 12-15 feet to the next healthy Oak tree (Photo 7B). Note a few non-life-threatening, dead branches in the neighboring tree from Glyphosate toxicity (7B).

**P8** An older, established Oak Wilt Epicenter can be more challenging to remediate. The tree in the right of this photo has been dead for several years (note missing bark), but the Oak Wilt fungus had spread Underground to the two trees in the left of the photo. A Conservation District Oak Wilt Expert recommended the DNR/Bruhn Model for this site. The Medical Doctor owner of the property couldn't bring himself to destroy so many healthy trees. He sought additional advice, eventually reaching a local arborist who knew about my work. Again, the Glyphosate/Stump Cup 'Chaser' was applied to the two infected trees in the photo (left). No further evidence of Oak Wilt has occurred in the last several years to the delight of the property owner.

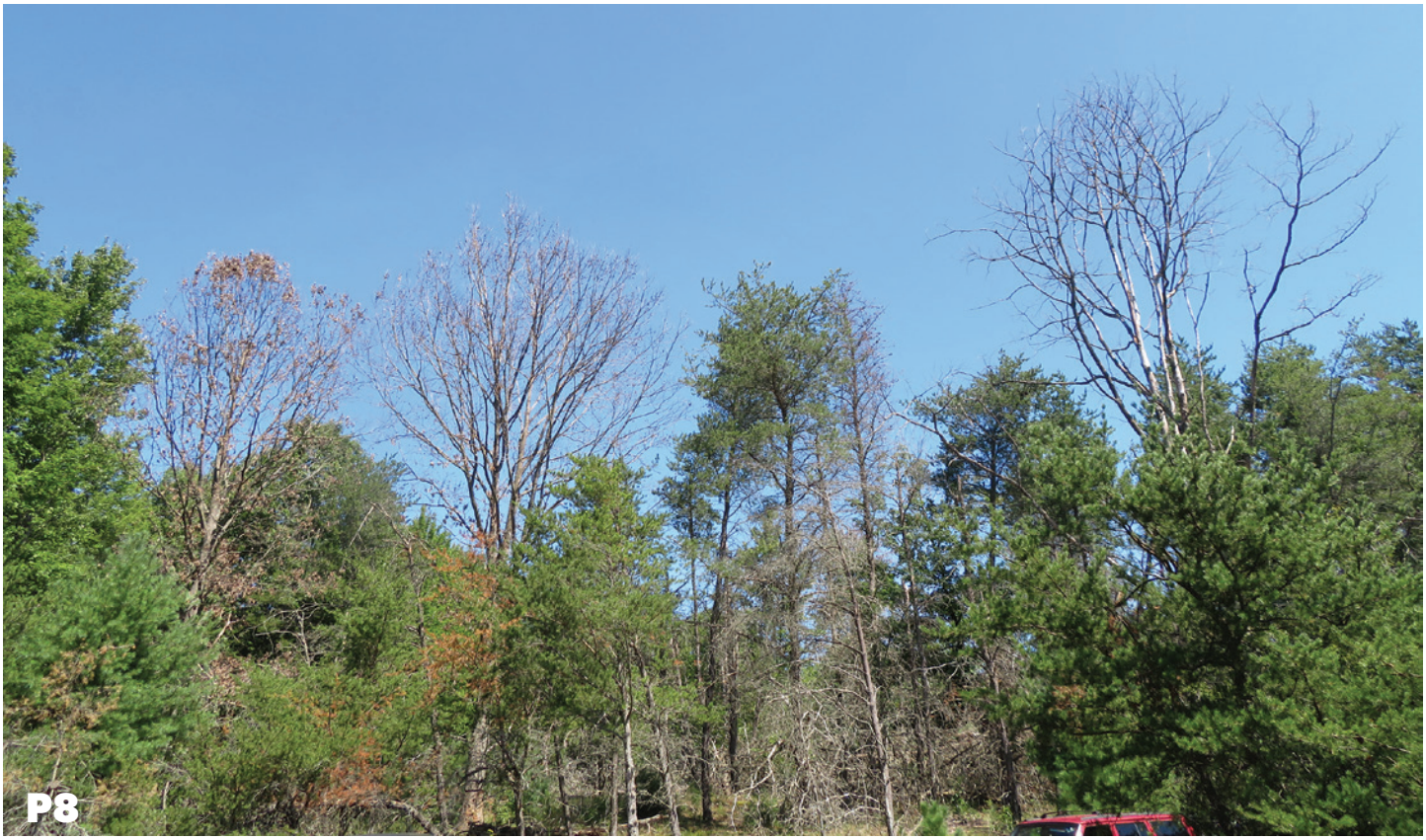
been infected for a year or more by the Oak Wilt fungus. The mode of action appears to be that the Glyphosate, after passing the Oak Wilt fungus in root tissue, kills the roots ahead of the advancing Oak Wilt fungus and hastens the fungal death by preventing it from transmitting through root grafts to nearby healthy trees. In many field experiments where 'Chaser' has been implemented, minor collateral damage (toxicity symptoms) may appear on nearby healthy Oaks, but complete tree recovery usually occurs. Surprisingly, the Oak Wilt fungus fails to infect nearby healthy Oak trees through root graft transmission. 'Chaser' has been highly effective in stopping the progression of Oak Wilt at many sites, without the sacrifice of healthy Oak trees. With several years of data, I have concluded that 'Chaser' is the most cost effective, environmentally friendly, and easy technique for Oak Wilt Management of all available options.

## 'Chaser Whack-A-Mole':

As related earlier, 'Chaser' has been highly effective at stopping Oak Wilt at locations all over Michigan. I'll relate just two examples herein. In northern Michigan, property owners experienced Overland Spread of Oak Wilt to one tree on their lakefront property (Photo 7A). An Oak Wilt Qualified arborist proposed the DNR/Bruhn Model, because that was what he was taught through the OWQ program; implementation of that model would have resulted in the destruction/removal of every Oak tree on the property. But wait, there's more. The implementation of this destructive Model would have destroyed many trees on other neighbors' properties as well, even across a paved road. The next-door neighbor is a friend of mine and a retired arborist, who stood to lose many of his trees as well if the DNR/Bruhn Model was implemented… or if Oak Wilt was not contained. With my consultation and inclusion of this site in my research, the 'Chaser' was applied to the lone infected tree three years ago. No spread of Oak Wilt has occurred in the interim, not even the relatively short distance of 12-15 feet (Photo 7B).

At another location near Traverse City, an expanding, older Oak Wilt epicenter was found on some extensive woodland acreage owned by a Medical Doctor (Photo 8). A Conservation District representative recommended the DNR/Bruhn Model as her standard repertoire for Oak Wilt containment in the area, as she had been taught. The MD, a tree/nature/woodland lover, hesitated with the proposed destruction of so many trees and sought further advice. An arborist who knew of my work contacted me; I recommended the 'Chaser' as part of my research to monitor the site after implementation of the procedure. In Photo 8, the older infections occurred to trees on the right; note bare branches from bark shedding, indicating tree death occurred several years prior. The subsequent movement of the Oak Wilt fungus Underground to the left resulted in two recently wilted trees (left). The 'Chaser' was applied to the two trees, left in Photo 8, several years ago. There has been no further spread of Oak Wilt in the ensuing years to the elation of the MD property owner.

The 'Chaser' seemed too good to be true, essentially a Godsend to dedicated scientists and arborists who want to manage Oak Wilt. In 2023, however, I discovered two sites where the 'Chaser' might have failed to stop Oak Wilt. One example of apparent failure of 'Chaser' was at Emily's property (Yes, the same Emily featured earlier and in Reference #11: *Oak Wilt Management and Ethics*…). In review of Emily's Oak Wilt site, I initially visited her in January 2023 to advise her on Oak Wilt Management



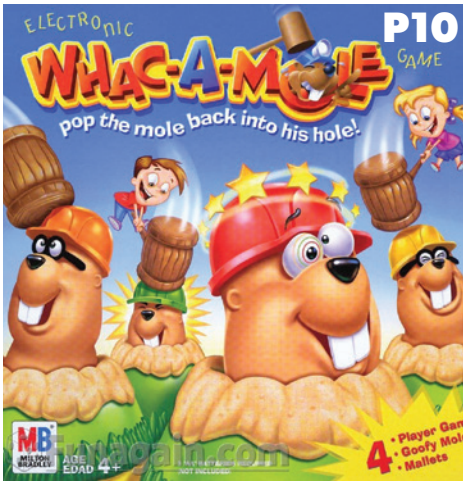



(Photo 9A). She had already begun implementation of the DNR/Bruhn Model according to OWQ arborists but stopped the program after she realized she would be sacrificing approximately 60 Oak trees around her home, not to mention damage to other species in her woodland with the ensuing destruction. I recommended the Glyphosate 'Chaser' treatments only to Oak Wilt-affected trees. Glyphosate applications to the Stump Cup were administered in early February (2023). By spring, everything looked "hunky-dory"; there was no further spread of Oak Wilt during the spring and summer (Photo 9B)… until September (Photo 9C). With review of the situation in September, it appeared that the Oak Wilt fungus had breached the 'Chaser' treatment, although there was a possibility of Overland Spread as well. We decided to assume Underground Spread. It would not be unanticipated that the Oak Wilt fungus might spread in an older, established Oak Wilt site even with 'Chaser' applications. Dead trees may harbor the Oak Wilt fungus in their roots for years but may not be able to transport Glyphosate due to root vascular system failure. What to do next? In my ever-open-minded manner, I suggested further options for her. One was to implement the Glyphosate/Stump Cup Tier Tree Model, which would mean sacrificing a tier of healthy trees. This would be a minor affront to her woodland compared to her original plan (DNR/Bruhn) promoting mass destruction of her woodland. As an alternative, I also recommended continuing with 'Chaser'. As explained, I designed 'Chaser' not only with the idea of chasing down the Oak Wilt fungus in roots, but to also chase the fungus down in whole trees. By theory, continued attack of the Oak

**P9 A,B &C** I first visited Emily's Oak Wilt situation in January 2023, after she had been advised that the DNR/Bruhn Model was the official Oak Wilt remediation method (Photo 9A - Several large Oak trees in this photo have been affected with Oak Wilt for a couple of years). Some work had already begun but Emily couldn't bring herself to condone the removal of at least 60 healthy Oak trees according to the procedure. She was eventually put in contact with me, and I recommended the Glyphosate/Stump Cup 'Chaser' application only to infected trees, which was implemented in February by a Land Restoration Crew. No further Oak Wilt developed in the spring and summer (Photo 9B); note three large stumps with Stump Cups and bark removed to prevent development of Oak Wilt fungal "Pressure Pads". In September, one Oak tree developed symptoms of Oak Wilt (Photo 9C) leading to the slight 'Chaser' variant named 'Whack-A-Mole'.

Wilt fungus by 'Chaser' as new Oak Wilt cases "pop up" in an older Oak Wilt site should eventually result in our outrunning/overcoming Oak Wilt. She replied, "You mean like Whack-A-Mole?" I thought, "Exactly." The phrase proposed by Emily has stuck. So, 'Whack-A-Mole' is our plan of action into the coming years; I'll keep the industry apprised of the results.

To digress a bit, 'Chaser' has been 100% effective in ***new Oak Wilt cases*** if enacted within a few months or a year of an Overland Spread event. Older, established Oak Wilt sites where the fungus has advanced underground can be more difficult as explained in the aforementioned comments. The reason 'Chaser' was effective in another older established Oak Wilt site (Photo 8) is because the Oak Wilt fungus had no direction to spread other than through two trees to the left in Photo 8. 'Chaser' effectively eradicated Oak Wilt from this site because the two recently infected trees in Photo 8 were easily infiltrated by the 'Chaser' activity of systemic Glyphosate. Whack-A-Mole (Photo 10) should operate in the same manner.




**P10** Whac-A-Mole® is an interesting game that many children have played. Believe it or not, Whack-A-Mole has a unique application to Oak Wilt as a repeated application of the Glyphosate/Stump Cup 'Chaser' technique for remediation of Oak Wilt.

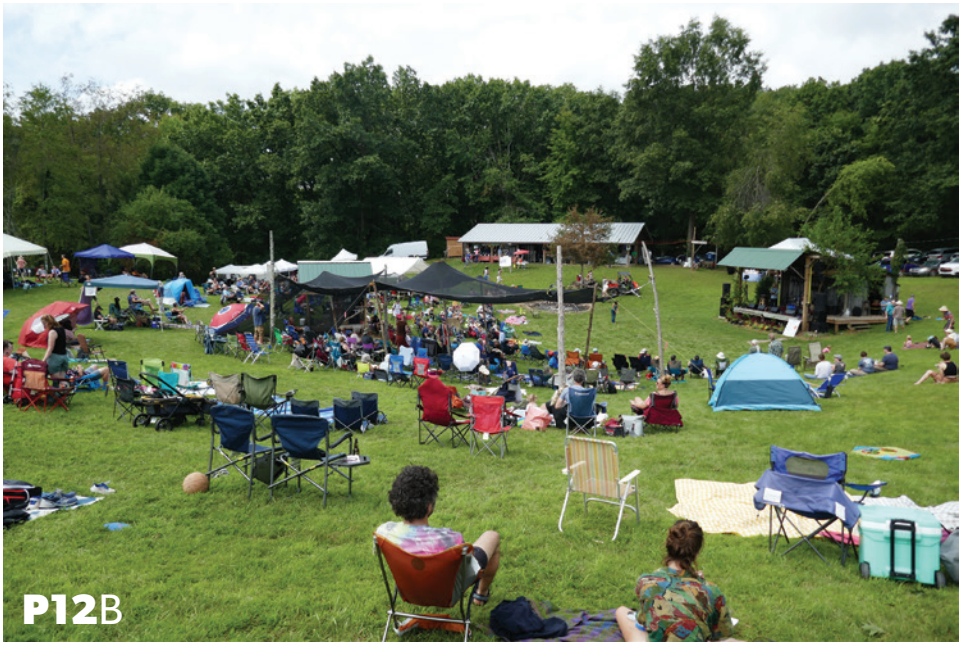
**P11** Although I did not attend Woodstock '69, I have occasionally been known to dress in weird costumes like this hippie outfit for certain occasions such as Halloween. That 1968 AMC Ambassador three-seat wagon seemed as long as a football field and would've made a great "Love Mobile".

## Woodstock (Holler Fest):

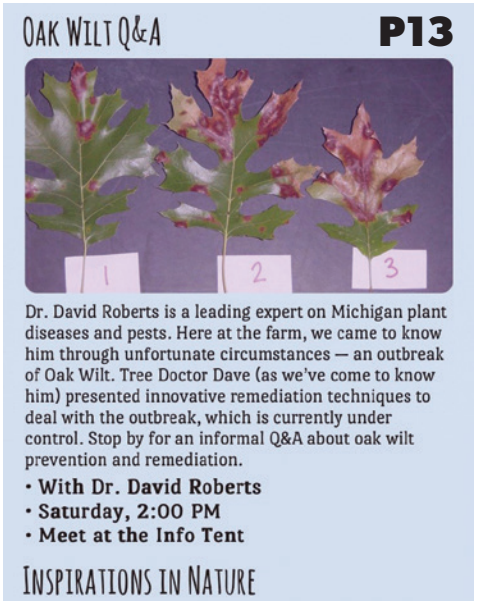
I didn't attend Woodstock '69, which was billed as a Music and Arts Festival. I'm sure it would've been a "unique" experience while being in the presence of, and listening to, the music of performers like Jimi Hendrix, Janice Joplin, Grateful Dead, Jefferson Airplane, Joe Cocker, and Crosby, Stills, Nash, and Young… among others. Even though I never lived the hippie lifestyle, I have been known to assume some unique outfits for Halloween and various parties (Photo 11). Holler Fest could be described as Michigan's own Woodstock (Photos 12A & 12B). It is also described as a music and arts festival that takes place every year in Southeast

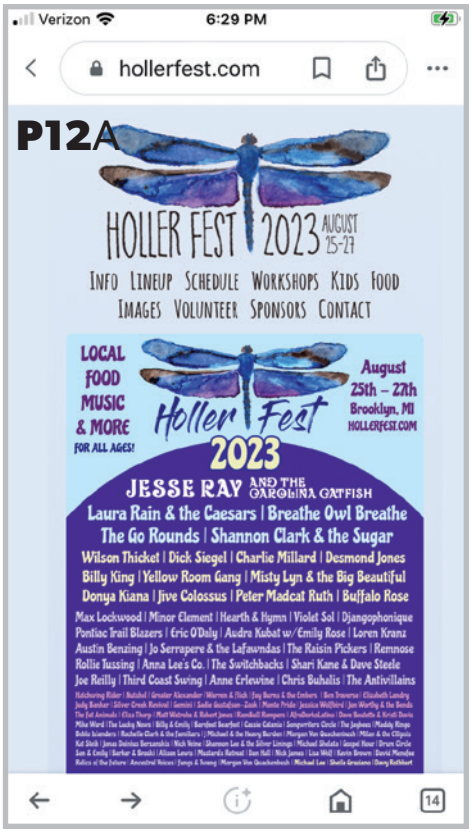
Michigan during August. Numerous bands perform and there are a lot of other activities and workshops such as nature walks, yoga for all age groups, kids' shows, dance and even clogging, sauna sessions, Bird ID, face painting, temporary tattoos, hula hoop lessons, family drum circles, etc. The event is held on a unique largely forested farm with rolling terrain. There are local vendors for food, much of which is grown organically on the farm. The location has its own natural Amphitheatre (Photo 12B).

Oak Wilt is a serious threat to tree and woodland health throughout Michigan. Emily, yes that Emily featured in this article and in Reference #11 *(Oak Wilt Management Ethics…)*, personally experienced the challenge of saving her woodland ecosystem from the destruction by this devastating disease, often exacerbated by individuals who attempt to remediate the problem via draconian measures. Emily is one of the primary organizers of Holler Fest. So, when she asked me to be present as a resource for Oak Wilt at Holler Fest 2023, I relished the opportunity, receiving good billing in the program (Photo 13). During my more than 40-year tenure at Michigan State University, my primary mission was to provide research updates and educational information to our industry and the public. I believe I have accomplished this role during that entire period and beyond through the Michigan Nursery and Landscape Association and their excellent periodical, *The Michigan Landscape.* I visualize venues such as Holler Fest as an opportunity to spread the word about our industry and what we do.




**ACKNOWLEDGEMENTS:** Without cooperation from arborists and the public, much of this research and information I generate would not be possible as we continue to learn about Oak Wilt and its Management. Sincere appreciation is expressed to Emily for supporting the good fight against this dreaded disease we call Oak Wilt and for her dedicated efforts in spreading the word.




**P12** Holler Fest might be Michigan's own version of Woodstock, held every year in August on a farm in Southeast Michigan not far from Ann Arbor. Because Emily was so impressed with my assistance for the preservation of her trees, she asked me to participate as a resource at Holler Fest 2023. Pictured is a portion of the program (12A) and the natural Amphitheatre (12B) on the farm where several venues enable different musicians to perform at the same time. A great time was had by all who attended.

**P13** I received good billing for Holler Fest. Emily is one of the primary organizers of the event. With her Oak Wilt experience, Emily wanted to do her part to educate attendees about Oak Wilt because she has developed an expertise in understanding the disease, which is quite common in Southeast Michigan.

## David Roberts

is a Presenter at GLTE 2024, held at DeVos Place in Grand Rapids, MI, January 23-25th.