The Plant Doctor's LANDSCAPE TIPS

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OAK WILT MYTHS AND MISCONCEPTIONS PART 1: RISK OF 'OVERLAND SPREAD'

INTRODUCTION

Oak Wilt has become a serious political issue. Government representatives, arborists, scientists, and industry leaders cannot always agree on various aspects about Oak Wilt that are crucial for our understanding of this devastating disease. Disagreement is nothing new among scientists, arborists, and government agencies except the manner of disagreement has become far less than collegial. It has become increasingly clear to me over the years, especially with Federal Funds having been allocated to states about what is now considered a non-native Oak Wilt disease agent, that various individuals or entities have agendas that are not necessarily in the best interests of arborists, arboriculture, or the public good. Whether due to agendas, personal enrichment, personal advancement, or the purposeful wielding of "power" over others, I think it is necessary to reveal and discuss some of the myths and misconceptions being circulated about Oak Wilt so that we can better understand the challenges this disease presents to Michigan and its residents. In this series of articles, interspersed with articles of other topics, I'll reveal some of the myths and misconceptions being circulated and try to address their validity. Probably one of the most controversial topics about Oak Wilt is Risk due to 'Overland Spread' (Photos 1 & 2, Figure 1).

PHOTO 2

Fungal Fructifications
(Reproductive Structures)

Photo 2: The Oak Wilt fungus forms "Pressure Pads", which is nothing more than that fungus' way of reproduction and dissemination. A typical Oak Wilt pressure pad is shown in the center top of this photo. Other fungi form other types of reproductive structures: Stinkhorn (upper left), heart rot conk at base of tree trunk (lower left), Armillaria (root rot, lower center), common morels (lower right), and cedar apple rust on juniper (upper right). All fungal reproductive structures are designed to perpetuate and disseminate the species.

PHOTO 1

Photo 1: All of the dying trees in this photo contracted Oak Wilt when the trees were pruned by an arborist during the High-Risk Period of 'Overland' Spread of the Oak Wilt fungus by sap beetles to fresh wounds. The lone healthy-appearing tree (left center) of the photo was not pruned, showing the aggression of the Oak Wilt fungus from "Overland Spread' to injured trees.

A BRIEF HISTORY OF VIEWS ABOUT OVERLAND SPREAD

When I first started working on Oak Wilt in 1984, I don't recall Oak Wilt being such a controversial issue. I literally had the "podium" all to myself. In the ensuing years, however, as interest began to grow on the subject, the Michigan Department of Natural Resources (MDNR) began yearly news releases, stating that it was safe to prune (or injure) oak trees up to April 15 and after July 15. In other words, the High-Risk Period of 'Overland Spread' of the Oak Wilt fungus by sap beetles occurs between April 15-July 15 (Figure 1). While many of us recognized this period as particularly conducive to 'Overland Spread' of Oak Wilt, some of us did not believe that the risk of 'Overland' Oak Wilt dissemination was "Zero" before April 15 or after July 15. I, for example, had always expressed a belief that diseases and pests did not understand artificial human calendar dates and did not abide by them. Fast forward to 2015, the Oak Wilt Coalition (OWC) was formed. The OWC was comprised of a diversity of individuals and entities including arborists, industry leaders, power companies, logging interests, government agencies, various contractors, University scientists, etc. Soon after the formation of the OWC, the MDNR submitted their "White Paper", which presented their policy views on Oak Wilt. Furthermore, the MDNR claimed their policy statements in their "White Paper" were backed up by "Science".

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Many of us on the OWC didn't readily accept the proclamations of the MDNR's White Paper. One of their policy statements reflected what they had already been saying for decades-that it is safe to prune oak trees until April 15 and after July 15. Because of the pushback from members of the OWC (not just me), the MDNR decided to fund research with two scientists with MSU; apparently the MDNR could not present the scientific evidence that led to their recommendations for all those decades. After working on Oak Wilt for about 38 years, I'll present just two examples herein selected from others, that represent why my view on the subject of 'Overland Spread' has solidified and why my views differ to some degree from the MDNR and perhaps other individuals.

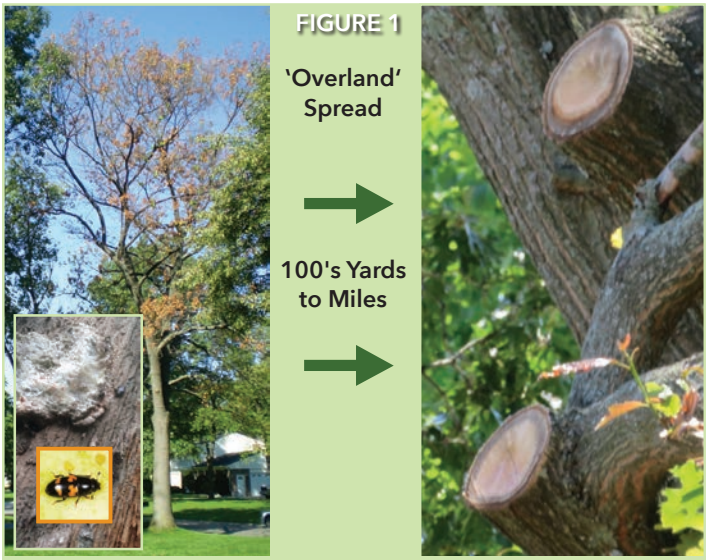

Figure 1: 'Overland Spread' of Oak Wilt is summarized in this figure. Pressure pads form on declining/dead trees (inset left). Sap beetles (orange inset left) feed on the mold of the pressure pad and subsequently transfer fungal spores hundreds of yards or several miles to fresh wounds on oak trees. Fresh wounds on oaks attract sap beetles for about 5-7 days.

PAUL'S OAK WILT STORY

Paul is a scientist who has worked for a variety of scientific firms over his long career. Several years ago, Paul decided that his oak trees needed pruning on his suburban property (Photo 3A& 3B); there were many oak trees on his property and in his community. And like his neighbors, Paul's property backed up to undeveloped city-owned woodland property, presenting the neighborhood with a unique woodland and natural environment. As with many scientists, Paul is meticulous, considering all factors in his ensuing homework on the topic of interest. He doesn't buy a new refrigerator without performing the advanced research to purchase the best product. The same was true when his house needed reroofing. Listening to the MDNR's public pronouncements, that it is safe to prune until April 15, he took their advice believing a government agency has the public's interests at heart. Just to be certain and to minimize any potential risk, Paul scheduled his pruning for early March, well over a month before the April 15 deadline when Oak Wilt Overland Spread increases dramatically. Of his nine large oak trees

Photo 3A & 3B: Paul lives in a suburban oak forest where, several years ago, he lost eight out of nine oaks trees that were pruned in early March to Oak Wilt, well before the High-Risk period for Overland Spread from April 15- July 15. The reason for relatively large open spaces around Paul's home was due to the removal of eight large oak trees killed by the Oak Wilt fungus (Photo 3B). If the Bruhn Model for Root Graft Disruption had been used at Paul's property, many healthy oaks in this photo as well as many oaks external to this photo would have been sacrificed.

pruned in early March, eight contracted and died of Oak Wilt. Paul concluded that the reason the ninth tree did not contract Oak Wilt was due to the fact that it snowed on the day the arborist pruned it.

Despite the environmental devastation to Paul's landscape and woodland and the financial burden posed by Oak Wilt remediation, perhaps one of Paul's saving graces was that he did not utilize the Bruhn Model, which is a Root Graft Disruption technique frequently recommended to remediate Oak Wilt on sites. Utilization of the Bruhn Model would have necessitated the sacrifice of at least an additional 30-40 healthy oak trees on his property and nearby neighbors' properties, including city-owned property (Photo 3B & Photo 4). The arborist who attended to Paul Oak Wilt dilemma used my (Roberts) Tier Model for RGD. No sacrifice of any healthy

Photo 4: This large oak tree in a neighbor's front yard would needed to have been sacrificed along with 30 or 40 other oaks if the Bruhn Model for Root Graft Disruption had been utilized for remediation of Oak Wilt on Paul's property. This lone oak tree could easily be valued at $15,000 to $25,000 in landscape value.

oak trees was needed. In total, Paul lost eight of the nine oak trees that were pruned in early March. Plus, Paul lost a large maple, which he surmised had been severely compromised by collateral damage to its roots by the trenching operation to remediate Oak Wilt on his property. Needless to acknowledge as conveyed to me, I think it is safe to conclude that Paul has lost faith in some of our government institutions.

CANDY ON HOUGHTON LAKE

Candy lives on the shores of Houghton Lake near Prudenville, Michigan. She decided she needed her trees pruned. Candy had never heard about Oak Wilt before, so she scheduled the pruning for July 12. Apparently, the arborist Candy hired had never heard of Oak Wilt either; he took no precautions in terms of advice to Candy nor of preventing 'Overland Spread' to fresh wounds. Barely visible in Photo 5A is a declining tree that contracted Oak Wilt from 'Overland Spread'. All oak trees in the vicinity including the neighbors' trees are now at risk of contracting Oak Wilt. Photo 5B is a closeup of the afflicted tree amongst other oaks that are now likely to become infected from Underground Spread through root grafts if nothing is done to remediate Oak Wilt on this site. A population of oak trees extent for miles in either direction along the shoreline of Houghton Lake from Candy's property. Because her tree was pruned on July 12, does anyone really believe that the risk of 'Overland Spread' of Oak Wilt would have been Zero if she had waited to prune her tree just four days later on July 16? I don't.

DISCUSSION AND SUMMARY

I presented just two examples of 'Overland Spread" of Oak Wilt in this article. I have observed similar examples over more than 38 years I have been working on Oak Wilt. Paul's Oak Wilt crisis occurred well outside the High-Risk Period of April 15-July 15. Candy's Oak Wilt crisis occurred near the end of the High-Risk Period, which means that the likelihood of infection of her tree should have been minimal. While I acknowledge that the risk of 'Overland Spread' is less outside the High-Risk Period, the risk does not become "Zero", a position I have always maintained and must continue to support.

Despite some recent research funded by the MDNR, that tends to show little to no risk outside the High-Risk Period, their recent research cannot apparently account for these outlier situations. There is, however, other scientific evidence that has been around for quite a while and that can be used logically to guide us about Oak Wilt and 'Overland Spread'.

We know several things:

1. Sap Beetles may become active anytime temperatures exceed 45 degrees F.
2. Pressure pads of the Oak Wilt fungus can be found at many times during the year including winter when the cold temperatures preserve them until spring.
3. Injuries (pruning, etc.) attract sap beetles for 5-7 days after the injury occurs.

Therefore, The Rule can be prescribed that is both practical and easy to follow:

"Don't Prune Oak Trees if the Temperature will be Above 45 Degrees F for a Week Following the Injury."

Photos 5A & 5B: This view of Candy's home and landscape from Houghton Lake shows a residential woodland comprised largely of oak trees extending along the shoreline for miles. Barely visible in this photo (arrow) is a declining tree that contracted Oak Wilt from Overland Spread when it was pruned on July 12 (Photo 5A). A closeup of Candy's infected tree amongst a group of oaks on her property and directly adjacent to a neighbor's property (Photo 5B). Many oaks are now in jeopardy of contracting Oak Wilt. Does anyone want to bet their reputation that the risk of Oak Wilt would have been zero if she had waited just four days to have this tree pruned?

Photo 6: It is often said that over 90% of Oak Wilt spread occurs 'Underground' via root grafts. That is probably true and is the reason why we need to minimize the possibility of 'Overland' Spread that creates new infection centers for 'Underground Spread'. The Oak Wilt-afflicted trees in this photo became infected by 'Overland Spread' and now threaten all surrounding healthy oak trees.

I would urge arborists and tree owners to be cautious about Tree Injury and Oak Wilt. While the risk is comparatively low outside the High-Risk Period, the best time to prune (injure) trees is during cold weather, especially well below 45 degrees F. The value of oak trees especially in landscapes plus the cost of remediation including subsequent tree removals is both economically debilitating but environmentally unfriendly as well (Photo 6). A relatively foolproof way to avoid Oak Wilt infections from 'Overland Spread' is to paint the wounds immediately after the wound is created. This procedure should prevent Oak Wilt infections even during the High-Risk Period if emergency pruning is desired.

Dr. David Roberts has retired from Michigan State University but intends to remain active with the industry. He can be reached at 248-320-7124 or treedoctordave@gmail.com.