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OAK WILT TREATMENTS - EXAMINING THE FACTS

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Over the past few years, claims have been made that oak wilt can be cured or prevented by maintaining vigorous and healthy oaks. One of the most popular claims is that, by keeping trees in a healthy condition, their "immune systems" will be "boosted" and therefore the trees will "resist" being infected and killed by the pathogen that causes oak wilt. A variety of products, ranging from water to organic concoctions to fertilizers, have been recommended to keep oak trees disease resistant. The best way to assess the validity of these claims is by examining the facts about oak wilt, tree health, and immunity.

Webster's Dictionary defines ***immune*** as, "Having or producing antibodies or lymphocytes capable of reacting with a specific antigen." The indices of some of the most popular college textbooks on plant pathology, plant physiology, arboriculture, botany and plant biology, make not a single reference to antibodies, lymphocytes, or antigens in plants. However, every undergraduate animal biology textbook, and other sources such as the Mayo Clinic webpage, is filled with references on human immunology. Simply put, immunity in the sense of a antigen / antibody response is a phenomenon exclusive to the animal kingdom. For example, animals can be injected with a weakened or dead flu virus in order to prevent them from developing flu symptoms. The vaccine does not make the animal sick, but it introduces the immune system to the flu virus. Memory cells are then placed on guard, and are ready to produce antibodies when and if the full-blown flu virus challenges the animal. To our knowledge, you cannot inject or spray a weakened or dead oak wilt fungus (or any other material, such as fertilizer) on a live oak and expect it to produce antigens or antibodies that will attack and kill healthy oak wilt spores when they challenge the tree. So, there is no immune system (as a physiological process) in live oaks to "boost" in order to prevent oak wilt. However, immunity in plants could be broadly defined as "exempt from infection". In other words, oak trees don't catch Dutch Elm disease, and elm trees are exempt from infection from the oak wilt pathogen.

The oak wilt fungus is a vascular wilt disease that invades and causes the plugging of the water conducting tissues of oaks, and initiates wilt and almost certain death. It is commonly known as a "primary" pathogen, capable of killing mature, healthy oaks. The chestnut blight and the Dutch elm disease are also classic examples of primary pathogens. Hundreds of plant pathologists and foresters spent their careers and millions of dollars in an effort to halt the spread of these diseases. As with oak wilt, some measure of success was achieved in control of the Dutch elm disease. Unfortunately, not so for the chestnut blight. Following my daily observations of oak wilt for nine years, it has become clear that oak wilt does indeed kill healthy, mature live and red oaks, just as easily as it kills stressed ones. A good case can be made that the fungus can be transported even faster through vigorously growing trees. It can be further argued that that the higher level of vitality a tree has at the time of infection, the more quickly the tree will begin it's response of plugging it's vascular system, thus leading to rapid mortality. So, the notion that keeping oaks healthy will prevent oak wilt mortality is misleading, if not untrue.

From a general tree health perspective, it is a good idea to keep trees healthy. This can be achieved with supplemental water, organic concoctions (i.e. mulch, mycorhizae inoculations), and fertilizers along with other cultural practices. By keeping trees vigorous, they can better defend themselves against secondary problems, such as insect defoliations, hypoxylon fungus and drought stress. For example, a healthy tree that has just been defoliated by cankerworms, will have enough carbohydrate reserves (energy) in its root system to leaf out again without causing a decline syndrome (not to be confused with oak wilt) that eventually could result in death to the tree.

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Foresters and plant pathologists in Texas with the Texas Forest Service, USDA Forest Service, and Texas A & M University have been actively working on oak wilt control since 1977. Nearly 2.5 million feet (about 475 miles) of state and federally cost shared trenches have been installed surrounding nearly 1700 oak wilt centers in Texas since 1988. Trenching severs the root connections (which are the major conduit for oak wilt spread in live oaks) between adjacent trees. The oak wilt is contained within the boundaries of the trenches in about 66% of the cases. This was determined by walking and evaluating these trenches yearly. Tens of thousands of trees have also been treated with Alamo fungicide (propiconizole). And while there are failures, there are significantly greater numbers of trees that have survived following these recommended treatments, than if they had not been treated.

So, until a better "scientifically" -determined treatment is found for oak wilt, individual macroinjections with Alamo fungicide and trenching to prevent tree-to-tree spread remain the most effective (although not perfect) tools known to combat this disease today. For a treatment to be considered effective it must be based on science and thorough research. The research needs to have results that are replicable and be published in refereed scientific journals and have withstood the rigors of peer review. If the research fails to meet these criteria, then claims cannot be made that they are "scientifically" proven.

The best approach to coping with oak wilt apart from total prevention, may be to treat those individual high-value trees immediately threatened by the disease with Alamo fungicide, trench around expanding oak wilt centers where feasible, and plant a great variety of native Texas tree species that are resistant to oak wilt.

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