# The Plant Doctor's LANDSCAPE TIPS

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## WANTED: DEAD OR ALIVE?

### INTRODUCTION

In the days of the Wild West, renowned individuals such as Doc Holiday were notorious as multitasking. Doc was called Doc because of his Dentistry training, which generally involved such high tech methods such as slamming the door to yank that sore tooth out of the patient's mouth. Doc also garnered a reputation as a gambler, ladys' man, gun slinger and, at least in modern day movies, as an infirmed alcoholic afflicted with a disease known back then as Consumption . . . but still exhibiting enough fortitude to kill the outlaw Ringo before taking his last breath.

Today, we must be multitaskers as well, although our multitasking efforts are somewhat different than Doc Holiday's (Photo 1). In our industry, we need to know a lot about many different facets of plant health care if we are to be high quality stewards of trees and landscapes. With my close working relationship with our wonderful landscape/arboriculture/nursery industries in Michigan, I receive daily queries about various plant issues. Sometimes these questions arrive via a text message or email with an accompanying photo or three. Also, because I have a website, treedoctor.msu.edu, I receive requests for assistance from all over North America . . . and sometimes even as far away as Europe and the Middle East. Last week, believe it or not, I received an email from a landscape architect who had established trees and landscapes in Dubai. Some of the trees were declining, so, after a series of back and forth emails, I think I put him on the right track with some ideas to pursue.

**Photo 1**: After discovering the Emerald Ash Borer in 2002, the TreeDoc went undercover as Emroe A. Bohr to investigate this elusive, invasive pestilence. A secretary and students posted this wanted poster offering a sizable reward for knowledge about his whereabouts.

Invariably, such queries stimulate more questions from me than answers. Photo 2 was recently submitted to me from a city forester in Michigan who wanted to know what may have caused the browning on this pine. This and many other contacts over the years have prompted me to provide some basic guidelines on determining the causes of plant problems, and especially to determine whether trees or some of their parts are dead or alive. This article is essentially a follow up to the article, "Diagnosing Plant Problems", published in the February, 2010 issue of *the Landsculptor*. Hopefully the following tips will provide some basic, preliminary steps to take, which is what I will almost always advise when I receive such an inquiry.

### DEAD OR ALIVE?

One of the first steps I usually perform when visiting a sick tree (or woody shrub) at a site is to test for viability . . . in other words check for life or death. This is usually the first question I ask when someone sends me a query . . . with or without pictures. One of the easiest, quick and dirty techniques is to check for live cambium; recall from high school biology that the cambium represents the living vascular system in trees right beneath the bark (also remember that most of the wood tissue in a cross section of a branch or trunk is nonliving). Checking for viability in the cambium can be accomplished by simply scraping the bark or sectioning down through the bark; viable cambium will appear as a succulent, green layer in healthy woody

**Photo 2**: This photo is typical of the queries I receive all year long. The submitter asked what may have caused the browning of the needles/branches. My response, as always, was, "Are you sure the branches are really dead?"

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**Photo 3**: This photo shows the very first test I usually perform when diagnosing tree problems. With a pocket knife, I test for viable, live cambium tissues (right) or for declining, dead tissue (left).

**Photo 4A**: Checking for bud viability or life is relatively easy. Simply pull a bud or two from branches. Viable buds will exhibit green, succulent bases.

**Photo 4B**: Nonviable, dead buds will exhibit a brown to black base. Bud death may be caused by such factors as frost, winter injury and herbicide . . . especially those herbicides in the carboxylic acid group that concentrate in the meristematic tissues to inhibit growth (Example, Imazapyr).

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plants (Photo 3, right). This can be done using the world famous Bowie Knife or a standard, garden variety pocket knife, which is probably the most useful tool employed by the "TreeDoc" (a pocket knife can also be used in self-defense if a client becomes unruly because she/he doesn't like my diagnosis). If a plant is on the decline or is dead, the cambium tissues beneath the bark will appear brown and desiccated (Photo 3, left).

Another technique that is especially telling on all woody plants throughout the year but especially during the dormant months on deciduous woody plants is to lasso (yank) a couple of buds from the branches. Viable buds will exhibit a green succulent (cambium) base (Photo 4A), while the bases of nonviable buds will be brown to black in coloration (Photo 4B). Dead buds but live stem cambium may suggest winter injury to the buds or herbicide injury to the buds, such as that experienced with Imazapyr.

Even another very simple technique is something I call the "Snap Test". Simply bend a twig or branch until it breaks. If there is a clean break accompanied by an audible "snap", the branch is usually dead. Viable branches will bend almost into a "U" or "V" before they break; the bending of viable, live branches will not result in a snap or a clean break . . . at least until the twig is doubled back onto itself.

These three simple tests – checking the cambium, checking the buds, and the "Snap Test" – are invariably the first steps I recommend when I receive a question and/or a photo about a plant. I find that very few individuals have pursued these tests before contacting me. These are also the very first tests the TreeDoc performs when visiting a site to troubleshoot tree or landscape problems.

### READING SIGN

When I want to escape the rigors of everyday life, I sometimes turn to reading. When I want to really escape, I often read western novels. One of my favorite series to escape life's stress is The Trailsman. Skye Fargo, the hero of the Trailsman series, can track any injun, any scoundrel and any living critter by "reading sign". The Trailsman is so good in fact that he has never been killed in a shootout, has never contracted an STD, and always comes out on top in a bar room brawl . . . just like the heroes in modern day movies!

Just like reading sign in the Old West, we can also read sign when examining plants. Recalling the favorite tool of the TreeDoc, the pocket knife can be used to good advantage. The cambium, the live portion of a tree, is where things often happen. For example, sectioning through the bark can not only reveal viability but may also disclose other abnormalities. Discoloration, such as streaks, in the cambium often implies a vascular infection. (Photos 5-8).

**Photo 5**: Using the TreeDoc's favorite old west tool, scraping the bark on this branch revealed some unusual staining. The discoloration was caused by Verticillium, a fungus that causes wilt on many woody shrubs and trees.

**Photo 6**: In this cross-section of a branch, some unusual greenish-brown spots occur beneath the bark in the vascular system. This is a Bretziella fagacearum infection of red oak, otherwise known as Oak Wilt.

## PROCRASTINATION IS SOMETIMES A BEAUTIFUL THING

The true heroes of the Wild, Wild West avoided confrontation if at all possible . . . at least that is what we have been told. Procrastination often leads to diffusing of tensions and less . . . death. There have been numerous situations over the past several decades where the TreeDoc has recommended procrastination as a plant health care remedy. In other words, "Wait and See." This technique has actually been a highly effective treatment method in some cases (Photos 9 & 10). Either because of our own misdiagnosis or because nature has other plans, trees will often recover by their own volition. Trees have a great capacity for survival, especially if humans do not interfere.

**Photo 7A**: This Norway Maple exhibits a troubling branch dieback. Note dying branches.

**Photo 7B**: Cutting a branch from the Norway maple in Photo 7A and then sectioning the bark revealed some interesting observations. In "Reading Sign," note that the larger, lower section of the branch exhibits a darker brown cambium than the smaller lateral branch, which still has some green foliage. This is evidence of a canker, usually caused by fungi such as Valsa.

## THE TREEDOC DOES HOUSE CALLS

Diagnosing tree problems can be a difficult if not daunting task. Diagnostic Labs at most Land Grant Universities such as MSU can assist with determining the cause of a plant's decline or death. Diagnostic Labs typically have much greater capabilities for performing diagnostic tests than the average layperson or professional arborist

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**Photo 7C**: "Reading Sign" on another branch from the Norway Maple in Photo 7A shows a fairly distinct line of demarcation between good tissue and bad tissue (canker).

**Photo 8**: In this cross section, note the healthy-appearing, whitish tissue on left compared to the grayish-brown discolored tissue in the branch on the right. The branch on the right exhibits death, typical of that seen with winter injury.

**Photo 9A**: This photo of a sycamore near Eaton Rapids, Michigan was taken by the TreeDoc in early June one year. The tree had been severely afflicted by a double-barreled whammy of frost and anthracnose (fungus), a foliar and twig disease. Unknowing individuals often believe trees are dead and quickly remove them.

**Photo 9B**: A photo of the same tree taken approximately 1½ months after Photo 9A shows complete recovery. Simple diagnostic tests such as checking the tree in Photo 9A for live cambium and bud tissue, if necessary, would have revealed the tree was likely just fine.

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or landscaper. A Diagnostic Lab's capability of performing an accurate diagnosis often depends on the quality of a submitted sample. Poor quality or inadequate samples may result in no diagnosis or an inaccurate one. In such cases, the collection of all pertinent information accompanied by a site visit by the TreeDoc can usually elucidate the problem . . . and as with much satisfaction, he later rides off into the sunset.

For more information, visit treedoctor.msu.edu

*The author, MSU and MGIA do not endorse any particular products. If using pesticides, be sure to read and follow label directions.*

**Photo 10A**: About that conifer in Photo 2, the jury is still out . . . but we will see with time and further diagnostic efforts. Conifers (especially native white pine) often turn brown due to desiccation, particularly during the winter months. (See Photo 10B)

**Photo 10B**: Often watching and waiting is the best strategy if no obvious signs of maladies can be detected. In the case of the conifers in Photo 10A, complete recovery is expected as evidenced by the new shoot growth in the spring. The older, brown needles will eventually be shed in its natural deciduous phase anyway.