



# The Plant Doctor's LANDSCAPE TIPS

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## ARB'S MOST COMMON KILLER

### INTRODUCTION

Arborvitae (*Thuja* species) is a genus of evergreen/conifer that is widely used in Michigan's landscapes (Photo 1). The genus encompasses five major species that uniquely possess flattened, fan-shaped leaflets or branchlets (Photo 1 Inset). Arborvitae adds desirable greenery and textures to our landscapes, especially during the doldrums of winter. Arbs also provide dense screens, which are desired for privacy, better than other species (Photo 1). Also known as white cedar, arborvitae occurs widely in natural areas as well, tolerating a wide range of conditions ranging from well-drained areas to borders with wetlands. However, the plant performs best in well-drained soil conditions. Native to North America, *Thuja occidentalis* has an interesting evolutionary history according to fossil records.

If we search for characteristics of arborvitae on the web, we will tend to conclude that the tree is "plagued" with a wide variety of debilitating problems . . . so much so that we might not want to

*Continued on page 20*



Photo 1

**Photo 1:** Arborvitae is an "evergreen" conifer that occurs widely in nature and is commonly utilized in managed landscapes. It is a tough, durable plant with very few serious diseases and pests. It contributes green color and interesting textures for Michigan's drab winters. With its dense, feathery foliage (Inset), this genus makes a great screen.



## The Plant Doctor's **LANDSCAPE TIPS**

### ARB'S MOST COMMON KILLER

Continued from page 19

install this tree in our landscapes; among these problems, spider mites, leaf miner, tip blight and root rot are most commonly cited. However, these detriments are not consistent with my experiences. While I have occasionally seen leaf miner, spider mite activity and, rarely, several different root rot diseases, such as *Macrophomina* Charcoal Root Rot, *Armillaria* Root Rot, and *Phytophthora* Root Rot (Photo 2A), it is my experience that arborvitae is a very tough, carefree, durable plant, except when it is abused (Photo 2B). Probably the most common problem we experience in natural areas and landscapes is deer feeding damage (Photo 3).



Photo 2A



Photo 2A

**Photos 2A & 2B:** Serious life-threatening arborvitae diseases and pests are generally not that common. However, when a lone arb in a row dies, we'd better look for a lower stem or root problem (2A). The presence of white "mycelium" beneath the bark indicates *Armillaria* root rot (2A Inset). *Phytophthora* root rot is exacerbated by excess soil moisture. Arborvitae can be abused; in 2B, these arbs installed as new transplants were never watered during the entire summer to help them become established.



Photo 3

**Photo 3:** For many varieties of arborvitae, deer damage is probably the most common issue.

#### FORENSIC ANALYSIS

So, what is the most common lethal problem on arborvitae? That depends on the location of the plant. Without doubt, the most common killer of arborvitae *in nature* is deer feeding . . . but not on mature established trees. Seedlings of young trees will have a difficult time surviving and establishing during the winter months when Michigan's deer population is famished. **However, for managed landscapes, at least in my experience, the number one issue affecting arborvitae is WATER.** Determining the cause of arborvitae decline and death can involve some serious sleuthing efforts. Water issues, almost always excess, are so common that whenever I receive a call for assistance on arborvitae issues, I preemptively almost always assume the problem is water. Please follow along as I relate several examples of water-induced decline of arborvitae in managed landscapes.

#### Example #1

At this site in southeast Michigan, mature and well-established arborvitae are showing symptoms of decline and eventual death (Photo 4A). An arborist was asked by the property owner, a brain surgeon, about the cause of his arborvitae woes. Befuddled by the decline, the arborist asked me for assistance because he could find no serious disease or pest problems on the plants. When I examined the trees, I too could find no evidence of any serious diseases or pest problems. Believing water was most likely involved, we began "digging deeper". What we found confirmed my suspicions. First, examining the drainage of the roof gutters and downspouts, we discovered that one major downspout had been buried in mulch and would not disseminate rainwater sufficiently to avoid localized saturated soil (Photo 4B). We also found that one of the arbs had previously died and been removed, likely from the excess soil moisture and poor drainage. Add in the condensation water from air conditioners and frequent irrigation, a disaster was in the making.



Photo 4A



Photo 4B

**Photos 4A & 4B:** In my experience, the most common concern that threatens the health of arborvitae in managed landscapes is excess soil moisture, which may occur from irrigation, precipitation, poor drainage, and other sources. These well-established older arbs started turning brown (4A). Why? Careful examination disclosed no serious disease or pest problems. Engaging in “forensic analysis”, an arborist and I discovered the rain gutters and downspouts were plugged (4B Inset). In 4B, a downspout had been buried in mulch leading to a drainage problem; note that a dead arb (stump still present) had already been removed before we arrived on the scene. This area is also irrigated and receives condensation water from the air conditioners. Too much soil moisture!

**Example #2**

At this site in western Michigan, most of the arbs had been replaced at least once, some twice (Photo 5). The nursery supplier indicated that further replacements under warranty would no longer be guaranteed, the reason the property owners contacted me. Carefully examining the plants, I could find no obvious evidence of diseases or pests on the above ground portions of the trees, which is consistent with my experience with this tough, durable species. Using a soil probe, I determined that the soil was saturated and smelled of anaerobic conditions. Further investigation disclosed a rainwater downspout and a sump pump discharge pipe that served not only for keeping the basement dry but also for expelling water softener effluent. Upon my revelations for the likely cause of the arborvitae decline, the property owner exclaimed that the neighbor irrigates his lawn daily and that the water drains downhill into the vicinity of the arborvitae. This much water spelled serious health issues for these plants.

*Continued on page 22*



Photo 5

**Photo 5:** Most of the arbs at this site have been replaced at least once, others multiple times - note differences in size of older plants vs. new replacements. The nursery supplier had informed the property owner that their guarantee would no longer be honored. A soil probe disclosed saturated, clay soil (Inset, lower left). Other contributors to the decline of the arborvitae included a downspout (green arrow) and a sump pump discharge, which not only doubled to keep the basement dry but also served to discharge the water softener effluent containing salt (yellow arrow). The fact that the neighbor's daily irrigation system (left, out of photo) drained downhill into these arbs ensured these plants were doomed.

## The Plant Doctor's LANDSCAPE TIPS

### ARB'S MOST COMMON KILLER



Continued from page 21

#### Example #3

At another location with declining arbs, the property owner had contacted a company to request help in determining why her 'Green Giant' Arbs were turning brown (Photo 6A). A representative from the company suggested a fertilization program, a very common recommendation from our industry for rectifying landscape problems. The homeowner, becoming suspicious with this recommendation, contacted me. I saw no evidence of nutritional deficiencies that warranted a fertilizer program, per se. The soil around the plants was waterlogged and did not drain properly. Three downspouts drained into underground tile (6A), but I suspected they were plugged. Although the irrigation had just been turned on the day I arrived, daily irrigation was the norm at this managed landscape. Crappy soil had been brought into the site before the three-story home was constructed (6B), ensuring the landscape would encounter drainage issues.

#### DISCUSSION

Diagnosing landscape problems can be challenging. Determining the cause of the decline of relatively trouble-free plants such as arborvitae can be downright difficult. Our clients (the public) can become uncomfortable if we ask delving questions. Like, what



Photo 6A



Photo 6B

**Photos 6A & 6B:** An arborist company was called into this residence to assess why the arborvitae were turning brown (6A and Inset). The arborist suggested fertilizer to correct the problem - an all-too-common recommendation from our industry. The homeowner didn't believe there was a nutritional problem, hence, the reason for contacting me. I determined saturated soils from several sources. Note in 6A that there are three downspouts from this three-story home (6B). While there was drainage for the downspouts, I suspected they might be plugged. There was also daily irrigation applied to the trees. In further discussions with the property owner, I learned that numerous truckloads of "topsoil" (really clay fill dirt) was brought in to fill in this wet land area. Even the native tamaracks were dying in the wetlands (6B Inset).

is your irrigation schedule? Many reply that they don't irrigate their landscape excessively as they become very defensive. Eventually, with further probing, they may finally admit that they run the irrigation system daily, even several times a day at some locations. With the three arborvitae locations I featured in this article, another question I asked is if they are sure their rain gutters and downspouts are functioning properly. Again, homeowners can become defensive if they assume we are questioning the proper maintenance of their homes. In many cases, including my own home, we know that maintenance for things like gutters and downspouts is not always up to proper standards. In our queries, we are only trying to get at the "root cause" of their plant problems. 🌿

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