



The Plant Doctor's LANDSCAPE TIPS

By Dr. David L. Roberts, The Plant Doctor LLC a.k.a. The Tree Doctor

THE PRESERVATION OF OLDER BLUE SPRUCES

INTRODUCTION

Colorado Blue Spruce (*Picea pungens*) has traditionally been a favorite landscape tree. In decades long gone, blue spruce was probably the most widely planted conifer due to its beautiful bluish-green color, its fairly rapid growth habit, its pyramidal shape, and its dense, "evergreen" nature, which helps to take away the Michigan doldrums of the long winters and sunless skies . . . among other desirable characteristics. In recent decades, Blue Spruce has grown out of favor due to an increasing plethora of various maladies. I have typically collated these maladies into a label I call "Spruce Decline". Spruce Decline has resulted in the debilitation and death of millions of spruces all over Michigan and the Midwest (Photo 1). Nevertheless, despite all the decline and loss of Blue Spruce specimens, there are still many very healthy examples that make significant contributions to the aesthetics and value of landscapes (Photo 2). And people are still clamoring for them!

Conifers are especially useful for screens (Photos 3, 4, & 5). Where Blue Spruces were planted decades ago, their use as

screens is still highly desired (Photo 3). And some of these property owners are willing to throw mega bucks at maintaining the health of their Blue Spruce trees. Some of our concerned clientele are millennials; many more are retired baby boomers who do not want to, or perhaps cannot wait for, the establishment of new plantings during their/our lifetime. Plus, baby boomers often have the finances to invest in the preservation of their trees, regardless of the species. Blue Spruce, especially, falls into the category of "Preservation Value" due to their propensity to collect a variety of debilitating diseases and pests. I receive questions about Blue Spruce all the time, but in recent months, for some reason, the

concern for Blue Spruce has escalated. Some people lament the decline of their spruce trees, in which, over the years, they have loved their trees almost as much as their children and pets . . . well maybe? Some people have invested so much of their hard-earned money in their trees

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Photo 1

Photo 1: "Spruce Decline" is common throughout Michigan and the greater Midwest. Various insects and diseases are contributors to the decline and ultimate death of the magnificent Blue Spruce. Another factor in the Spruce Decline complex that is rarely considered might be called "Provenance". We have taken a pretty tree from its Rocky Mountain, well-drained habitat and planted them in landscapes where heavy clay, excess irrigation, fertilizers, herbicides are the rule.



Photo 2

Photo 2: Despite widespread Blue Spruce Decline, there is still a very healthy population of Blue Spruce throughout Michigan.



Photo 3

Photo 3: This row of Colorado Blue Spruce was planted decades ago. Newer property owners, who value these trees for their size, beauty, and screening capabilities, are investing substantial sums of money in these trees to make sure they do not decline. As retirees, they do not want to invest vast sums of money in the removal and replacement of these magnificent trees because they are not likely to reap the benefits of new trees. Preservation of these trees would likely be far more cost effective.



Photo 4

Photo 4: This row of Norway Spruce resides on the same property as the Blue Spruces in Photo 2. When establishing new plants, it is always wise to install plants that are of low maintenance in lieu of plants that require high maintenance. Norway Spruce generally require far less maintenance inputs than Blue Spruce, but depending on location characteristics, may attract more than their share of problems, which may make plant health concerns challenging for those in our industry.



Photo 5

Photo 5: People often want conifers for screening and the contribution of color during the dull, drab dormant season. While certain species of spruce offer these desirable characteristics, other conifers do as well. Concolor Fir (aka White Fir) offers some of the same attributes of Blue Spruce without all the problems. And in this photo, Arborvitae 'Green Giant' presents as a lovely screen, texture, and color but without being a favored food for deer as so many other varieties of Arborvitae do.



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and failure still occurs (Photo 6). Other property owners have not invested much in the management of their spruce trees' health but are depressed at the cost of removing them and planting replacements. It takes a generation, if not a lifetime, to grow a large, mature tree. So, it is understandable that our clientele have become concerned about the health of their Blue Spruce. And that raises the question – are we doing enough as an industry to preserve older Blue Spruce trees? I thought it might be useful to review a few pointers on how to preserve Blue Spruce for years to come.

BLUE SPRUCE PRESERVATION

There are several serious diseases and pests that contribute to Spruce Decline. In generally recognized categories, these include needlecast diseases, canker diseases, insect pests, and cultural and environmental problems. We need to be able accurately identify and diagnose these problems so that appropriate measures may be taken to correct said problems. Many of the factors contributing to spruce decline were summarized in an article from the February 2013 issue of *The Landsculptor* called "Spruce Decline in Michigan" (pages 21 - 23). This article is available from me or the Michigan Green Industry Association (Editor Shelley Ede).

Monitoring: Although our clients often don't mind spending money on treatments or other maintenance procedures applied to their trees, they do not like to spend money on what they believe should be a free service: Monitoring and utilization of our knowledge. Monitoring is invaluable in the case of Blue Spruce trees because debilitating maladies may sneak up on us and our clients before we know it . . . and then it may be too late to reverse the decline (Photo 6). We need to catch the problem(s) before they become major issues that are difficult, if not impossible, to correct. Or on such trees that may need "Preservation Attention" such as Blue Spruce, we may engage in preventative measures.



Photo 6

Photo 6: An elderly couple planted these two Spruce trees decades ago when they built their dream home. For many years, they loved these trees, which bracketed their landscape, and invested in extensive care provided by various plant health care companies. A company, which had been caring for these trees in recent years and provided good inputs resulting in overall good tree health, referred the elderly couple to me when the trees started exhibiting decline. No one seemed to notice the attack of the leaders, typical of Pitch Mass Borer, which killed the top of the spruce tree on the left and has severely infested the top of the tree on the right. Note copious rivulets of sap on trunk high in the tree on right (Inset).

Review Symptoms: Are symptoms occurring at the top or at the bottom of the tree? Diseases caused by fungi (molds) tend to occur lower on the tree where there is more moisture, longer. Insects may attack almost anywhere on the tree, but some insects have their preferences (i.e. borers on trunks, galls on branch tips). Are branches or twigs dying? Are needles yellowing, or browning? Are the needles shedding from the tree? Is there stunting of needles or shoots (Photo 7)?

Accurate Diagnosis: Needlecast diseases are caused by fungi and tend to affect the lower branches first, working their way upwards. Needlecasts will initially cause droppage of previous years' needles and rarely cause branch death except after years of repeated defoliation (Photo 8). Canker diseases such as *Cytospora*



Photo 7

Photo 7: The stunted shoot and needle growth of this spruce is not due to disease or pest but is caused by Imazapyr herbicide applied in a combination product to the surrounding landscape. Many trees and shrubs were damaged or killed at this site.



Photo 9

Photo 9: Cytospora canker is far more common on Blue Spruce than other species of Spruce; it is easily recognizable on lower branches by the resinous secretions resulting from attack by the fungus. Phomopsis canker on the other hand, a major player in Spruce Decline, rarely causes resin secretions and may occur at various locations on the Blue Spruce as dead twigs and branches (Inset).

Review and Apply Management Options: Assuming an accurate diagnosis is made, now is the time to consider what to do to remediate the problem. If irrigation water is constantly striking the lower branches, needlecasts, canker diseases, and other maladies will likely be exacerbated by the high levels of moisture and needle/branch wetness (Photo 10). If pesticides are to be

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canker occur lower on the tree where there's more moisture (Photo 9). Phomopsis (aka Diaporthe) canker will generally attack lower on the tree but may produce dead twigs higher up, often randomly (Photo 9 Inset). Insect galls may occur throughout. Pitch Mass Borer may attack almost anywhere on the trunk but death at the top is a common result (Photo 6). An accurate diagnosis may be difficult but indispensable if the correct management options are to be implemented to properly control the malady and stop the decline.



Photo 8

Photo 8: Needlecast diseases typically attack lower branches on spruce trees. Symptoms include initial yellowing of previous years needles, followed by needle browning, followed by "casting" of needles from the tree.



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utilized, ensure that the label is followed. Although this article does not go into enough depth to address all the chemical inputs and timing, I'll make some comments about a couple major players in the preservation of Blue Spruce from decline by various maladies. While the Pitch Mass Borer is a "borer", it is not a "Coleoptera" (beetle) borer for which Imidacloprid products work very well. Pitch Mass Borer is a clear wing moth for which other insecticides are recommended. There are a variety of fungicides that will assist in managing needlecast diseases. However, among all the available fungicides, if we are attempting to control Phomopsis Canker in addition to the other diseases, the thiophanate methyl class of fungicides is vital in the mix for Phomopsis control.

Preventative Measures for Preservation: While in general it is not advisable to apply chemicals unless we are sure they are absolutely needed, there are occasions where preventative treatments can be justified. Plants in high value landscapes are examples. For Blue Spruce, because of the seriousness of the variety of maladies that this species contract, routine and prophylactic measures can be warranted where tree owners want to preserve their trees for years to come. 🌿



Photo 10

Photo 10: The nemesis of Blue Spruce and an exacerbator of Spruce Decline is excessive irrigation, especially water striking the branches of spruce trees.

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PRUNING

By Phillip Kelley, Certified Arborist,
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Why do we prune trees? Whenever I ask this question there are a myriad of answers. Here is a list in no particular order: Aesthetics, Vista (view), Safety, Elevation/clearance, Utility clearance, for the money!! These are all viable reasons but let's break them down for a second.

Aesthetics to start: I have never met a tree that didn't think it looked good! Every tree has grown to fit its environment and trying to force our opinion of what looks good on another living organism proves our arrogance again. Trees don't need mirrors because they all believe they look amazing. Now for view pruning, this again, is a purely human need. It is not the tree's fault in any way – either it was there first, or we planted it in the wrong place. As for safety, if you look at tree-vs-people incidents in the world you are four times more likely to get struck by lighting then struck by a tree or tree part. Utility clearance is a very real reason to prune a tree – it is a safety concern as well as a reliability concern for us, but once again it is a problem caused by us. Finally, the real reason we prune trees is for the money! I have been getting paid to work on trees for 31 years and I am very grateful. I bring up the pruning topic to make us all stop and think before we act. Trees are the largest living organism on the planet that can't get out of our way. Don't you think if trees could pick up and move, they would have been doing so all along?

Trees have been around on this planet way before mankind. They have also adapted to almost every environment and can withstand incredible forces applied to them. They are biomechanical wonders defying gravity and growing in what would seem to be impossible locations. To assume they need anything from us is laughable. So, when we prune, we need to look at the why behind our actions and realize the impact we are having by our actions. Trees do not heal, so every cut we make is forever. We are basically tattoo artists for trees! Every cut we make will be a mark on that tree for the rest of its life. Trees do have CODIT (*Compartmentalization of Decay in Trees*), but the reality is this system varies greatly based on tree species, health, and age of the tree. When pruning, we also change the biomechanical structure of the tree, which is scary, since most of us are not biomechanical engineers and truly don't understand the long-term implications we are putting on the tree.

Trees grow and adapt through two major influences: sunlight and wind. In their conquering of gravity, they grow and develop branches, wood taper and roots based on these influences and their desire to not crash to the earth. Every cut we make should have purpose as well as a really good reason.

Here are a few general rules for pruning I have developed based on research and education over the last ten years:

- Thinning is not necessary, nor does it benefit the tree in any way. Leaves and inner canopy are necessary for the tree to disperse energy from storms as well as protect the trunk and stems from the sun, which is getting more intense every year.
- Removing deadwood down to two inches is a common pruning spec but not necessary. Deadwood does not harm trees. Branches less than four inches generally speaking won't harm humans so their removal will more often than not only create a bigger issue for the tree later.

Trees have been dealing with dead wood for centuries very successfully. My rule of thumb is, I shorten the dead wood if there is a target but leave it or a stub if it is firmly attached. I determine this by giving it a kick test!

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