The Plant Doctor's LANDSCAPE TIPS

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NORWAY MAPLE DIEBACK

INTRODUCTION

Norway maple trees (*Acer platanoides*) have been widely planted in landscapes throughout the U.S. and Canada for decades. It is widely regarded as a desirable landscape tree, providing a very dense shade and relatively fast growth. However, Norway maple is not without its faults. It is highly susceptible to the conspicuous tar spot, which can cause defoliation, and to a variety of diseases that may cause dieback and death (Verticillium wilt, Phytophthora collar rot/bleeding canker, etc.). Furthermore, many experts now consider this introduced tree as "invasive."

During the spring and early summer of 2019, I began receiving calls of alarm from arborists, landscapers and the general public about their observations of dieback in Norway maple (Photos 1 & 2). The alarm was magnified when it was noticed that one branch would wilt and die, then another, then another . . . in other words, the disease seemed to be spreading right before our very eyes. The symptoms of dieback on Norway maple mirrored those I have seen in previous years. For example, after the winters of 2014 and 2015, some of the coldest winters in recent record, a high percentage of the Norway maple trees in some regions such as this tree in Midland Michigan were reported to express severe branch dieback (Photo 3). Apparently, this problem is again active this season in other areas as well. It is ironic that tar spot did not

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Photo 1: To the alarm of the owners of this large Norway maple near Brighton Michigan, the tree begin dying back in the late spring and early summer of 2019. One of many such examples in Southeast MI, arborists were called in to hopefully resolve the problem.

Photo 2: The tree in Photo #1 is possibly the largest Norway maple encountered by the author. The tree's owners were justifiably concerned because they consider this landscape tree as an important venue for family gatherings and weddings.

Photo 3: The Norway maple dieback experienced in 2019 was similar to that observed after the harsh winters of 2014 and 2015. This photo was taken in 2014 in Midland, Michigan where a high percentage of Norway maples in communities were affected.

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appear to be active this season on these trees (Photo 4).

SYMPTOMS AND PROGRESSION

The earliest symptom of Norway maple dieback includes a slight off-color and lethargic foliage on specific branches. Subsequently, the foliage appears wilted (Photo 5). Initially, we may miss these earliest symptoms until we see the foliage turn tan in color (Photos 1 & 3). The foliage is eventually shed from the limbs as the dry, brittle leaves snap from the limbs during gentle breezes and winds, leaving bare branches. All stages of this dieback can be seen in Photo 1. Tracing the damaged areas back towards the main trunk of afflicted trees often discloses a proliferation of healthy epicormic shoots (Photo 6). A demarcation between healthy branch tissue and dieback areas of the branch often reveals a canker when sectioned with a knife (Photo 7). Observations by some arborists suggest that the symptoms of Norway maple dieback occur on the south side of trees. While there is some tendency for this

Photo 4: It is interesting to note that despite the prolonged cool, damp weather of the spring of 2019, little tar spot has been noticed . . . even on trees afflicted by Norway maple dieback. Other regions of Michigan may have different experiences.

Photo 5: The initial symptoms of Norway maple dieback, which may be missed, is the wilting of the foliage on certain branches. The leaves will appear to be drying but still green. Later, the foliage will turn a conspicuous tan (see Photos 1 & 3) and eventually be shed from the affected branches.

Photo 6: Branches that are affected by the dieback at branch apexes often show shoot proliferation on the same branch closer to the trunk. This proliferation of shoots on branches that are dying back usually indicates a canker somewhere "outside" the shoot proliferation but "inside" the dieback (see Photo 7). The abundant shoot growth is a recovery response of the tree to the dieback at the branch extremities.

Photo 7: Typical of Norway maple dieback is the formation of a canker somewhere on the branch. In this photo, note the death (brown) tissue on the right and the live (green) tissue on the left. This junction of life and death is usually a fungal canker.

Photo 8: Norway maple branches that exhibit no dieback often showed excellent growth for the 2019 season, thus far.

observation, it is not always consistent. Unaffected branches on afflicted Norway maples appear to have put on excellent growth during the spring and summer of 2019 (Photo 8).

In locales where Norway maples are affected, sugar maples, silver maples and related Crimson King maples do not appear to be affected (Photo 9). While there is seemingly a continued progression of dieback, branch by branch, in my experience, the symptom progression usually stops by mid-summer. Due to the prolonged cool, damp conditions of the 2019 spring, dieback symptoms may develop longer than "normal."

Many individuals have wondered if *Verticillium* wilt is the culprit. While *Verticillium* can affect a variety of maple species, this wilt fungus does not seem to be involved in this Norway maple dieback. In addition, *Verticillium* would not normally affect such a high percentage of trees so suddenly in affected communities. Other people may assume that the malady is "Maple Decline" (Photo 10); such is apparently not the case. For more information on *Verticillium* Wilt and Maple Decline, please see the November 2015 and October 2016 issues of *The Landsculptor®*, respectively.

Many years ago, I cultured a *Valsa (Cytospora)* fungus from these cankers, so presume that fungus to be the incitant of the present problem. Another scientist who worked in my lab during the 1980's, completed his doctorate degree on *Valsa* canker of Norway maple. Regardless, the problem seems to be caused by a canker causing (fungal) organism. It is also significant that the disease seems to occur after abnormal or harsh winters. Hence, it is possible that winter sunscald or winter injury may be predisposing the tree to infection by the fungus. The prolonged cold, wet spring of 2019 undoubtedly exacerbated the problem.

POSSIBLE MANAGEMENT STRATEGIES FOR NORWAY MAPLE DIEBACK

Because the "disease" waxes and wanes from year to year, we cannot predict when or where the disease will manifest itself.

Photo 9: In areas where Norway maple dieback is common, other maples such as sugar and silver maples do not appear to be affected. Even Norway-related Crimson King maples were not appreciably bothered by the malady.

Photo 10: "Norway Maple Dieback" should not be confused with "Maple Decline," which is caused by a variety of contributing factors such as soil compaction, girdling roots, possibly Verticillium wilt, possibly Phytophthora collar rot/bleeding canker, etc.

In locations where the disease was quite prominent in 2019 (i.e. Brighton, Milford and Wixom), it had not been a problem in previous years. Most likely, the local weather played an important factor in disease development. Following are some ideas that may help us manage the problem.

Pruning: Because there appears to be a fungal canker involved, it might be advisable to prune the canker from the tree. In pruning the canker and extremity portion of the afflicted branch, be sure

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to do so only during dry conditions; wounds created during damp conditions may favor fungal infection. Also, to (completely) eliminate the canker from the tree, be sure to prune into viable green cambium tissue back towards the trunk of the tree. Sterilizing the pruning utensils may be prudent.

Thin Pruning: Because Norway maples tend to possess very dense canopies that maintain moist environments and because fungal cankers are favored by moist environments, thinning the branches to allow more light and air into the tree may help to thwart future infections. Please be mindful that excessive pruning or bad pruning techniques can cause additional dieback and decline.

Moderate Fertilization: Trees that are under stress and have experienced dieback may benefit from light to moderate fertilization to improve vigor and recovery.

Irrigation: Along with nutrition, the health and recovery of Norway maples may be enhanced from irrigation during dry and droughty periods. Irrigation is usually not recommended in the early spring when weather is typically abundant with rainfall. Additional moisture in the forms of mists and humidity from irrigation during the spring may promote the disease.

Chemical Treatments: Tree owners have asked if anything can be done to stop the disease and save their trees. Arborists have wondered if spray treatments or trunk injections may be effective. Assuming it is a fungal canker disease, we generally don't experience good success with fungicide sprays for their management (there are a few exceptions). Regardless, by the time symptoms are expressed in the spring or early summer, it is generally too late to make fungicide spray applications – the infections have already taken place. If fungicides were to be effective, they would need to be applied ***before*** infection occurs. I have no information on the use of trunk injections to control this disease or others such as anthracnose or Verticillium Wilt except that some arborists claim good success with some maladies.

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