

Ash Trees and the Emerald Ash Borer Minnesota Valley Country Club

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Introduction

Many destructive wood boring insects exist in the United States, but rarely do they cause widespread and destructive damage to large populations of trees. As a wooded, parkland type golf course with over 1200 mature trees, a destructive wood boring insect outbreak could have a big impact on Minnesota Valley Country Club's trees. Over the past six years, citizens across the Midwest and beyond have been keeping track of the spread of a destructive wood boring insect called the Emerald Ash Borer. This report takes a closer look at the Emerald Ash Borer and how it could affect the ash tree population at Minnesota Valley Country Club.

The Emerald Ash Borer

The Emerald Ash Borer (EAB) is a species of metallic wood boring beetle that attacks ash trees, typically killing trees in one to three years. Tree mortality is caused by the larvae or immature stages, which tunnel and feed underneath the ash tree's bark. Once these galleries of larvae take up residence under ash tree bark, they quickly consume the conductive tissue of the tree, essentially shutting down the trees uptake of water and nutrients and killing it. They attack all species of ash and have been very destructive in southeast Michigan and surrounding areas of the Midwest, destroying millions of trees. A native of Asia, it was first discovered in the Detroit, Michigan area in 2002, and is now found in at least 10 states. The insect was found in Wisconsin in July of 2008, in northwest Washington and northeast Ozaukee counties, around the village of Newberg, approximately 150 miles north of Chicago and 350 miles southeast of Minneapolis-St. Paul.

The Spread of the Emerald Ash Borer

The most likely and evident source related to the spread of the problem is with infested firewood that is transported out of infested areas into other states. The insect can also be transported in infested nursery stock and ash logs. There are several levels of quarantines being adminis-



Two small Ash.

tered by both state and federal agencies in all of the affected states. All counties in the lower peninsula of Michigan are under some form of quarantine. There are also federal and state quarantines in four southeastern Wisconsin counties. Current containment of the EAB varies from state to state, and includes elimination of ash trees in infested areas, extensive surveying of high risk areas, implementation of quarantines for ash products, and insecticidal treatments of infested trees and non-infested trees in high risk areas.

Minnesota Valley Country Club Ash Tree Population

There are approximately 230 ash trees on MVCC property. They include three types of ash tree, the green ash, the blue ash, and the black ash. The predominant species is green ash, *Fraxinus pennsylvanica*. All are susceptible to hosting and damage from the EAB. The ash tree population at Minnesota Valley is spread throughout the golf course. However, seven distinct areas of the golf course account for more than half of the population. In each of these areas, ash trees are either the dominant tree species in the area or have a group of large ash trees that dominate the immediate landscape. Each of the areas would be greatly impacted by the loss of ash trees. The following is a list of the

seven areas on the golf course that would be most impacted by the loss of ash trees. The list totals 118 ash trees, or approximately 51% of the total. The remaining 49% are spread out over the course and mixed in with other deciduous and evergreen trees.

- A) Hole #18: Five large ash trees on the right side of the first landing area.
- B) Holes #1 & 16: Thirty medium to large ash trees that are the dominant tree species in the rough between these golf holes.
- C) Hole #10: Ten medium to large ash trees in the right rough.
- D) Hole #8: Twenty-two medium ash trees in the left rough and behind green.
- E) Holes #13/14- Twenty ash trees spread out between the two holes.
- F) Holes #4/5- Twenty-five ash trees spread out between the two holes.
- G) Hole #6- Six large ash in the right rough.

Estimating Values of Ash Trees on the Golf Course

Any reasonable management plan for a golf course with a considerable number of ash trees would most likely be a combination of management procedures. The

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first step in a management plan would be evaluating each ash tree in the landscape to assign a relative value based on its position in the landscape of the golf course, its condition, the cost of removing and replacing the tree vs. attempts to keep it alive, and the willingness to invest resources in it over time. A likely starting point in the evaluation of ash trees on the golf course would be to place each into one of the following three categories.

A) Low Value Trees: Ones that are not integral to the landscape and that one does not wish to invest resources in to protect chemically, and ones in poor condition.

B) Moderate Value Trees: Ones that may be integral enough to invest resources in to protect chemically and are in good condition.

C) High Value Ash Trees: Ones which are very important to the landscape and warrant investing resources in on a yearly basis. Trees should be in good condition initially.

Preventative Insecticide Treatments

One insecticide that has shown promise in protecting ash trees from EAB is Imidacloprid.

Imidacloprid is a systemic insecticide that can be sprayed as a soil/bark drench or injected into the tree. The spray drench is the most common practice, and has been fairly effective in the control of EAB. The injection method is not as common on golf courses due to the large number of trees and the higher cost associated with it. It is however, the most effective and predictable treatment as the insecticide is immediately taken up by the trees conductive tissues. The drench method is also effective, but is less predictable, and takes several weeks for the insecticide to be fully taken up by the tree. Golf courses in high risk areas of Michigan and Illinois have, with varying degrees of success, reduced the loss of trees with preventative applications of Imidacloprid.

The following excerpts are from conversations I've had with other Golf Course Superintendents in high risk areas. Steven Sarnowski, Superintendent at Raisin River Golf Club, in Monroe, Michigan stated, "I cut our first dead tree from EAB down in January of 2001. We've been treating about

300 trees with Imidacloprid since 2003. Any trees we have not treated are dead, and that's around 400. Of the trees we have treated, we've lost about a dozen with another 20-30 with significant damage. We spend about \$10K per year on treatments, removal, and pruning." Robert Green, Superintendent at Sunset Valley GC, in Highland Park, Illinois stated, "We have been in a quarantined county for about one year. We have the pest and have continued to treat about 10% of our ash population with Imidacloprid. The remaining 400 ash trees on the property will probably succumb to the pest in a rather rapid period. My best advice came from Superintendents in Michigan, that said start cutting ash trees now so you're not faced with the sudden death of hundreds of trees." Dr. Dave Roberts of Michigan State University, who was the first person to discover and properly diagnose the EAB in the Midwest, stated, "we have clearly demonstrated that we can have 100 % success in preventing EAB infestation in ash trees with a combination of Imidacloprid and nutrients injected into the tree every two years."

It's recommended that treatments be made in early spring, with some differing opinions on how frequent these should be. It is quite typical for golf courses in the high risk areas to treat high value trees annually. The suggested rate of Imidacloprid using the drench method is .2 ounces for each 1" of trunk circumference. The current cost of Imidacloprid is \$312 per gallon. For a standard 30" circumference ash tree, the cost of one drench application would be \$14.62. Therefore, one gallon of Imidacloprid (\$312) would be sufficient to drench approximately twenty-one 30" circumference trees. These applications could be completed using MVCC staff and equipment. Total cost of Imidacloprid needed to treat all 230 of MVCC's ash trees, using a 30" circumference average is estimated to be \$3,412 on an annual basis. Using the same average circumference, drenching the 118 trees in the previously listed seven distinct areas of high impact would be an annual cost of \$1,740. Any additional nutrients to the drench application would increase the cost.

Pruning and Removal of Trees

Several factors determine the cost of cutting down and removing a tree. These factors include; location of the tree, size of

the tree, species, cutting and removal methods, method of disposal, time of year, and who is performing the cutting and removal. The current practice at Minnesota Valley is removal of medium and large trees by a professional arborist who is trained and equipped to perform such work. Small tree removal and ground pruning is routinely performed by MVCC staff. The majority of this work is completed during the winter months. In recent years, the majority of this wood has been burned on site, greatly reducing the overall cost. Removal of a single tree vs. a large quantity of trees also factors into the cost of tree removal.

When cutting and removing a large quantity of trees, overall cost is typically reduced substantially. Overall, there are a number of factors that are involved in determining the cost of tree removal. My best estimate on the cutting and off-site removal of all 230 ash trees on the golf course would be as follows. Single medium or large tree removal at \$800 each by a professional arborist and removed off-site. To remove the current 230 ash tree population at \$800 each would amount to \$184,000. I'm confident that this expense could be reduced by negotiating costs and/or burning of material on-site. Insect infestation and the subsequent cost of removing infested trees that die, is not a listed item on the club's tree insurance policy. A claim, could however be made at the time of infestation and removal, in an attempt to have the cost covered. The overall cost could and most typically would be spread out over several years depending on preventative treatment strategies.

Summary and Conclusion

The nearest confirmed location of EAB in Wisconsin, is over 350 miles away from Minnesota Valley. In addition, the population of the EAB pest in that location is very minor at this time. There are also state and federal quarantines in place in all affected states, including the effected counties in Wisconsin. Given this information, there appears to be no immediate high risk of the pest arriving here. This should allow the needed time to further analyze the value of the ash trees on the golf course, investigate preventative treatment options, and establish and adopt a management plan for the ash tree population at Minnesota Valley Country Club.