



Preparation and Response to Arboreal Illness on College Campuses



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Introduction

Trees have a massive positive impact on college campuses as a result of their significant environmental, social, and economic benefits. However, landscaping and tree health are often undervalued and underappreciated on college campuses, which sometimes leads to inefficient responses to tree illnesses and other landscaping problems. By analyzing the struggles of Saint John's University (SJU) to diagnose and treat the root cause of chlorosis, reverse its effects, and restore health to their afflicted trees, it becomes clear that preparation for problems is lacking. Additionally, the implementation of a clear chain of command would be beneficial when addressing these types of issues, and would make them easier for schools to address and resolve. These steps would help schools address problems with their trees and landscaping in order to maintain the aesthetics and benefits they provide.



Figure 1. The various stages of chlorosis seen at SJU. Treating these trees and returning them to full health was the subject of my 2015 case study.

Methods

- Analysis of existing literature on campus landscaping and its importance, including the role and benefits of trees on their environment.
- Research of famous and influential trees on college campuses.
- Case study of chlorotic oak trees at Saint John's University including:
 - Collection of baseline tree information
 - Leaf tissue micronutrient analysis
 - Soil samples (for pH, nitrate, phosphorus, and carbonates)
 - Research of chlorosis treatment options
 - Treatment
 - Continued monitoring of trees for results
- Analysis of results and findings

Type of Benefits Offered By Trees	Benefits
Environmental	<ul style="list-style-type: none"> • Catch and capture airborne pollutants, including CO2 and other greenhouse gases • Reduce topsoil erosion • Intercept storm water runoff and ensure groundwater supplies are replenished
Economic	<ul style="list-style-type: none"> • Reduce energy consumption and reduce energy demand and costs • Increase property values • Well maintained landscaping attracts and retains students
Social	<ul style="list-style-type: none"> • Helps to create a sense of place and community (see Figure 2) • Create more relaxing and enjoyable environments • Have a positive impact on how communities, or colleges, are perceived by visitors

Table 1. A brief overview of the various environmental, economic, and social/communal benefits provided by trees. When looking at the various benefits it becomes clear that trees have many positive impacts on their environments and their care and preservation is necessary in order to preserve these benefits.



Figure 2. The Texas A&M Century Tree. This tree has immense importance on campus in terms of creating a sense of place and community. The Texas A&M Forest Service says that the Century Tree "is considered a symbol of strength and loyalty on a campus known for its rich heritage."

References: Bassett, Corrine G. "The Environmental Benefits of Trees on an Urban University Campus." University of Pennsylvania, 2015.
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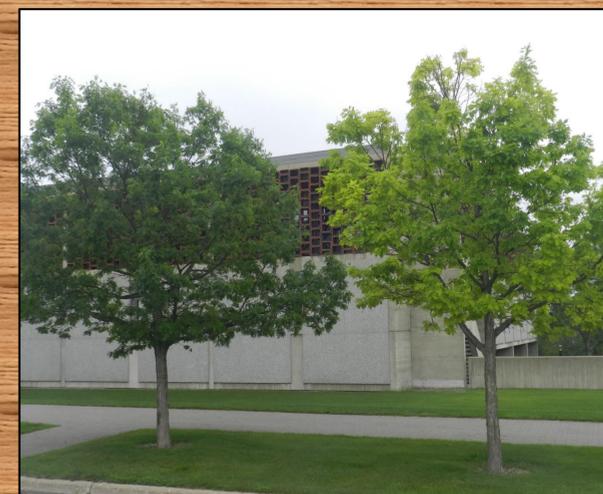


Figure 3. Some of the issues present in Saint John's University's oak trees. Chlorosis (as seen on the right), a lack of chlorophyll usually caused by a micronutrient deficiency, has killed trees at SJU and treating this condition has ended up being a process of several years, and no clear solution is apparent. Situations like these are why colleges and universities need to prepare for problems associated with their landscaping.

Results

- Trees provide environmental, economic, and social/communal benefits both on college campuses and everywhere else, as seen in Table 1.
- The issue addressed at SJU was chlorosis, likely due to a deficiency of Mn, likely caused by high soil pH.
- Trees were given a plant available form of Mn, but few results were evident.
- Issues with trees, like the ones at SJU, can cause colleges and universities to lose the numerous benefits offered by trees.



Figure 4. The lack of results seen in trees at SJU before (A.) and after (B.) treatment. Preparing for issues like these and being ready to address them is vitally important for all colleges.

Conclusion

Trees provide numerous quantifiable and unquantifiable benefits to college campuses in the form of environmental, social, communal, and recruitment benefits, yet their value is still often overlooked. Recognizing this value would be the first step schools should take to better care for their trees. The case study performed at SJU shows that solutions are not always clear cut, and various measures may need to be taken. Many schools are unprepared for these types of problems so preparing for unforeseen issues is imperative. Creating a clear chain of command, as well as a comprehensive landscaping plan and budget (including potential alternatives to the existing landscaping choices) would be the best way for schools to quickly address and correct issues when they arise.