

## A TREE HEALTH CARE PROGRAM FOR THE GOLF COURSE

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Insects dominate the animal kingdom in numbers and kinds, competing with man for space and other resources, including turfgrass and trees. Most insects are harmless, many are beneficial, and relatively few are pests. Michigan trout fishermen know that giant mayflies stimulate big browns to feed at night on the Manistee and Au Sable Rivers during late June and early July. Michigan's fruit growers recognize the importance of honeybees in pollinating their crops. They have also recently learned that some arthropods (insects and mites) that feed on pest species can be used in biological control programs in apple orchards. All farmers and most landscape managers realize that most insects are rather host specific. Alfalfa weevil does not attack lettuce and tomato, chinchbug does not attack cane berries, and bronze birch borer attacks only birches. Although there are exceptions to this generalization (Japanese beetle is a good example), remember that most trees are resistant to most insects. This means that only a few species of insects can make a living by feeding on any one kind of tree. Even fewer species have the potential to create enough injury to damage a certain kind of tree. Therefore, even though a number insects may feed on oaks, the landscape manager needs to learn, in depth, about only a few pest species in order to provide protection of oak trees on his or her course. This fact should encourage golf course superintendents that they can learn enough about insect pests of trees and shrubs to enhance the beauty of their course with minimal extra effort.

Turf is a high-visibility, high-maintenance "crop" that must be given highest priority by golf course superintendents. Trade journals serving the turf industry are filled with glossy color photos of first-class-grass, advertisements for products that facilitate turf maintenance, and articles by agronomists and other turfgrass researchers and extension specialists explaining how to improve turf maintenance. Only recently have these journals begun to give more space to other facets of the green industry.

Trees are high-visibility, low-maintenance crops that are often taken for granted in the landscape, including links. But, what is golf in the United States without beautiful, strategically located trees? Specimen trees and clumps of trees provide beauty and challenge on the golf course and are worth thousands of dollars, as those who have lost essential golf course trees will testify. But, how much time and how many maintenance dollars are trees accorded on the "average" golf course?

The average tenure of a golf course superintendent is 8 years. During this short time most trees on your course will not deteriorate to the point where their condition will jeopardize your continued employment, so the natural course of action is to neglect trees. After all, everyone knows that trees are big and strong and self sufficient, just as big people are expected to be strong and self sufficient. Have you ever considered that trees have basic requirements that are crucial to their initial establishment, beauty, and longevity? Familiarity with these requirements and annual preventive health care will require minimal resources and help trees fight their own battles against insects and other pests, many of which are opportunists, taking advantage of weakened trees.

As a general rule, healthy trees have fewer pest problems than those in low vigor. Proper planting site and cultural practices promote the vigor.

Trees are like all other plants in many ways, including site preference. Some trees, like hemlock and dogwood, are happiest in shade; other "love" sunny locations (e.g., juniper and maple). Sandy sites are best for some trees while others require heavier soil that provides greater availability of water. So, people who plant trees should make every effort to match the trees with the site, rather than simply using a tree that should provide the form, color and size desired, if growing conditions are appropriate. If growing conditions are not suitable, the tree may not only fail horticulturally, but its vigor may be low, thereby predisposing it to attack by secondary pests like borers, bark beetles and canker-causing fungi.

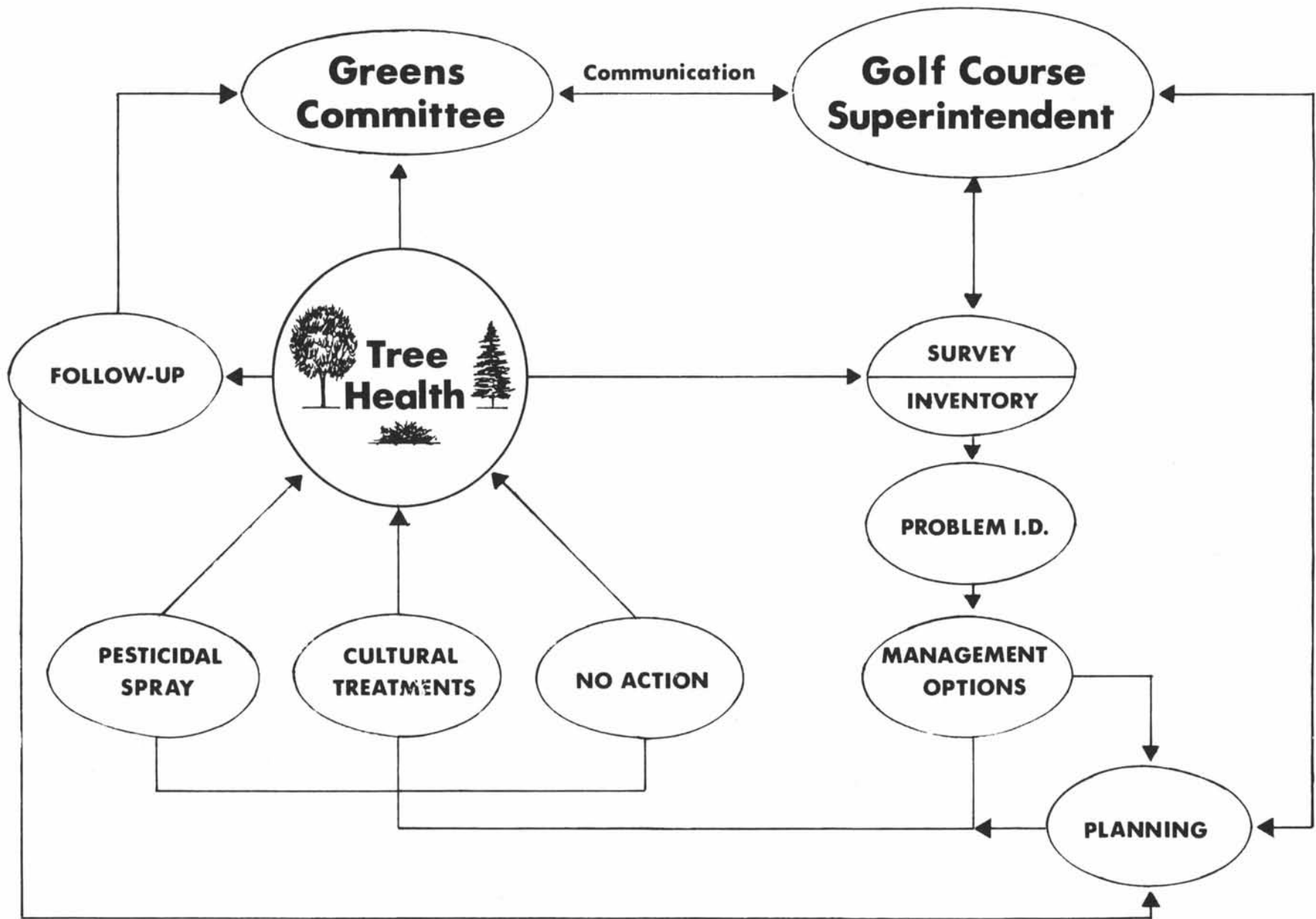
### A TREE HEALTH CARE STRATEGY

A strategy for implementing a tree health care program for the golf course is presented in Figure 1. The tree is central to the model because our greatest interest is in quality, healthy trees, not necessarily insects. The greens committee is at the top of the model because its members must be convinced that a tree health care program is important and cost effective.

The process begins with a survey of your course, including a detailed inventory of important trees. You may wish to segregate key, specimen trees and small groups of trees from woodland that will be managed less intensively. In any case, you will map the location of important trees and record species, age or size, condition, immediate maintenance needs, and physical factors that may influence its health in the future and implementation of management practices. After the inventory is complete, a list of important tree species is prepared so that you can learn cultural practices important to enhancing vigor of various tree species and which pests are most likely to cause problems on the most important trees on your course.

Next, you begin to increase your knowledge of entomology, the study of insects. Determine who is most knowledgeable about controlling insect pests of woody plants in your area and get to know them and how they can be most helpful. Learn which stage or stages of each pest is vulnerable to various control tactics and when this stage occurs. Find out whether a mist blower or hydraulic sprayer is more cost effective, including relative effectiveness. Ask authorities to help you get a feel for pest population density, time of year when injury is occurring, and the need for insecticidal sprays. Decide what your control goals are (foliage protection vs. a high level of insect control) and then develop an overall strategy for dealing with trees and their pests on your course. In any case, always follow-up any control tactic, cultural or chemical, to determine its effectiveness.

I believe that scheduled tree maintenance that includes proper pruning, fertilization, mulching, watering, aerification, and matching trees to sites, will minimize the need for conventional insecticides against tree pests on golf course and in other urban forests. This approach, combined with annual inspection of key trees or pest presence so that potential problems are handled before damage occurs, is an enlightened strategy that can be implemented by all conscientious golf course superintendents.



**Basic Plan for Implementing Tree Health Care**