stand trees will get themselves in trouble."

Potential risk—Shigo suggests changing the term "hazard tree" to determining "degree of potential risk."

Step one in this process involves asking "if this structure tree failed, is it really a hazard?" Are there people or homes around, or is it in a field?

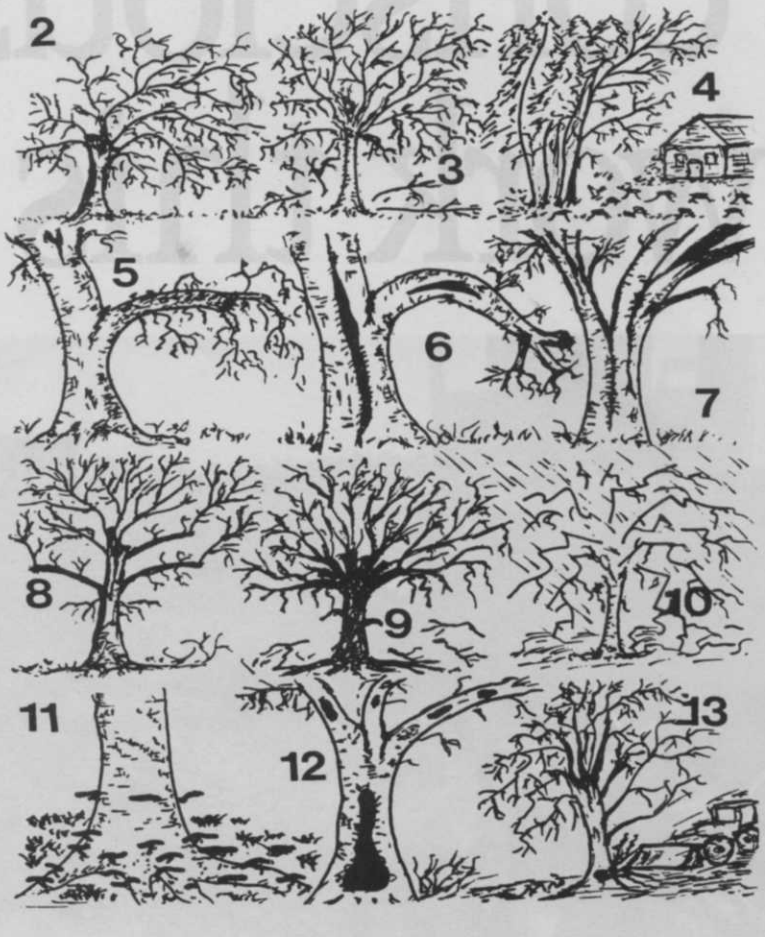
Step two is to use common sense. "The same tree in the same (tree care) manual can be left for a hundred years or be cut tomorrow," Shigo observes. "If we did everything our manuals say, we'd clear-cut our cities."

Branch "loading factors"—the amount of stress placed on a branch that may be prone to failure—are an important consideration.

"Is it a hurricane, a windy day or a sunny day?" asks Shigo. "It's not trees that kill people, it's the (branch) fractures that take place during moderate loads that kill people."

Snow and foliage are other loading factors to note, says Shigo, adding that some loads can actually amount to less of a risk factor when the entire picture is examined. For example, during a hurricane, people usually have enough sense to leave the area.

—The author is a freelance writer specializing in the green industry. He is based in South Euclid, Ohio.



Tree hazards: 13 questions that could save a life (see illustrations above)

1. TARGET (page 22): If the tree falls, will it hit cars, houses, power lines or people?

2. ARCHITECTURE: Has the tree grown beyond its normal form into a dangerous form?

3. HISTORY: Has the tree lost large branches lately?

4. EDGE TREE: Were neighboring trees cut away recently, leaving tall trees at the edge?

5. DEAD BRANCHES: Are there dead tops or branches? Is the tree dead?

6. CRACKS: Are there deep, open cracks in the trunk and branches?

7. CROTCH CRACKS: Are there deep, open cracks below joining stems?

8. LIVING BRANCHES: Do living branches bend abruptly upward or downward where tips of large branches were cut off—tipping?

9. TOPPING: Are large branches growing rapidly from topping cuts on big trees?

10. STORM INJURY: Are there broken branches, split trunks or injured roots? Are branches close to power lines?

11. ROOT ROT: Are there fungus fruit bodies—mushrooms—on roots? Were roots injured by construction?

12. ROTS, CANKERS: Are there hollows or cankers—dead spots—some with fungus fruit bodies? Is the tree leaning?

13. CONSTRUCTION INJURY: Have roots, trunk or branches been injured? Is there a new lawn or garden over injured roots?

Source: 'Tree Hazards' by Shigo & Trees, Associates

Green up your turf with iron

Using this micronutrient for rapid color enhancement is making turf and turf managers look good.

■ The chlorophyll molecule in the turfgrass plant is responsible for plant color. Iron is required for the photosynthesis which produces the chlorophyll—thus, iron can help enhance the green color which clients most desire in good-looking turf.

There is an obvious need for iron sup-

continued on page 36

IRON *from page 26*

plementation where iron chlorosis or plant yellowing occurs, a condition common to calcareous or alkaline soils (pH 7.0 or higher), as well as sandy soils. Today, however, most professionals applying iron are after cosmetic results rather than preventing or correcting chlorosis.

Iron can be used to make the turf (and the turf manager) look good.

Most soils contain abundant supplies of iron, but due to its limited solubility, this trace element is seldom taken up in sufficient quantities to meet the demands of high-grade ornamental turf.

Research has shown that, in addition to the effect of soil types and pH levels, iron uptake can be reduced by:

- cool soil temperatures,
- excessive moisture,
- micronutrient imbalances and
- high soil phosphate levels.

Heavy metals or high levels of nitrate nitrogen can also cause iron to become "locked up" and thus unavailable to the plant.

Supplemental iron has been available for years in many of the better grades of granular nitrogen/potassium/phosphorus fertilizers. Iron applied to the soil, however, rapidly reverts to a ferric state which is not available for plant absorption unless it is chelated. Unchelated soil-active products can get tied up with other soil minerals, decreasing the iron's solubility. And ferrous sulfate or ferrous ammonium sulfate iron in granular form must be watered in to prevent burning.

Chelated iron products, available in both dry and liquid forms, are formulated to hold iron in an available form for a more extended period of time. A chelating agent such as EDTA causes the iron to lose ionic characteristics and protects the micronutrient from soil reactions. This allows chelates to be used at lower rates and with reduced burn potential.

But chelated products are also generally more expensive to use than other irons, and may be slower in producing a visible color change. Thus, in recent years, sprayable iron sulfate products that are absorbed through the foliage have seen the most growth in the green industry.

Research has shown that foliar applications are significantly more effective and efficient. Foliar-active products not only provide a greater amount of plant-available iron, but they are taken in by the leaves, where the chlorophyll is produced.

Turf desiccation: winter's lasting gift

The biggest culprit is intense cold wind at times of low humidity. Disease comes along later.

■ Winter brings with it more than just colds and flu, mom. It can also beat up the turf until there's no turf left. They call it desiccation, and it's a lousy way to start the spring.

Turf desiccation—*a.k.a.* winter kill—comes in two forms: atmospheric and soil desiccation.

Atmospheric desiccation is caused by the general drier environment, accompanied by stinging wind and low humidity. The soil is unable to absorb water at lower temperatures, too, which adds to turf frailty.

Soil desiccation results in white leaves, but the leaves are more limp.

With an all-out temperature kill, turf leaves appear to be water-logged. They take on a whitish-brown color, and eventually turn dark brown. The leaves are limp and matted, and you may detect a moldy odor. This type of kill occurs when the soil temperature plummets quickly. Look for it during late winter freeze-thaw periods.

Dr. Jack Hall of Virginia Polytechnic Institute says desiccation can occur on sand-modified soil where there's limited moisture in the soil profile.

As Hall explains, winter desiccation is basically a function of available moisture and the extent to which the root system can absorb and store that moisture.

"Our best approach is sound management," advises Hall, "and fertilize in late fall to maximize root development."

"Our winter rainfall is generally adequate," says Hall. "The last time we lost bermudagrass to winter desiccation was in 1980-81. We had a greater kill on overseeded bermudagrass than in that which was not overseeded. The living overseeded grass continued draw down moisture."

Sodium content may cause problems. "Any time you have salt concentration in water, availability of water to plant is lessened," says Hall. "If you go into winter with high salt, unvavailability of moisture is more of a problem."

- Younger turf is more susceptible to desiccation.
- Protect turf with heavier dose of topdressing. Fabric may also work.
- Anything that promotes general plant health will reduce the threat of desiccation.

—Terry McIver

Winter brings disease

■ Snow mold invades in early spring, and lasts until June. Apply fungicide in early winter, ideally on the day before the first lasting snow.

Pink and gray snow mold occur when the temperature is just above freezing and accompanied by excess leaf moisture. The infected turf will turn flaccid and become dehydrated. Gray snow mold is differentiated by sclerotia imbedded in the leaves and crowns of the dieseased plants. Look for large brown patches covered with a whitish fungal mycelium.

Pink snow mold

Cottony snow mold begins as yellow patches which become the color of straw. Look for gray mycellium on leaves.

Prepare turf for winter disease before it goes into winter with soft growth from excessive available nitrogen.

Cultural prevention—For pink snow mold: Avoid excess nitrogen in the fall. Prevent snow accumulation on highly maintained turf. Improve air movement by pruning trees and removing brush. Remove leaves in fall and winter. Rake or spike infected areas in spring. Remove thatch build-up.

Gray snow mold: Avoid early fall nitrogen fertilizer before the first snowfall. Avoid excess lime. Keep the thatch layer to a minimum.