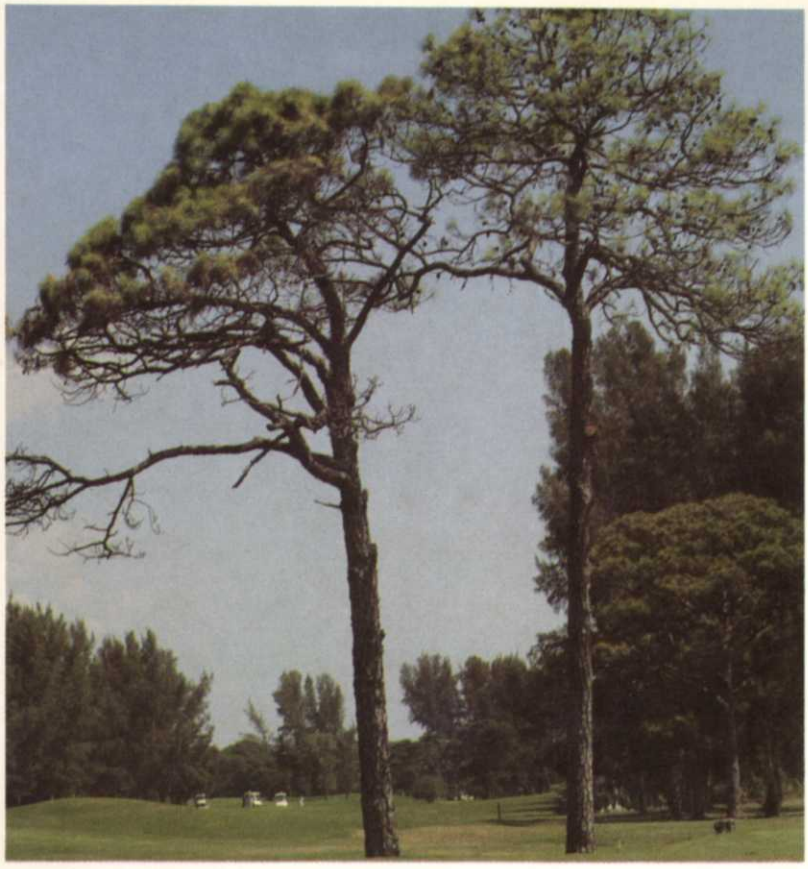

DAVID WEDGE

Two pinus elliotti showing severe South Florida slash pine decline. The author calls the condition "Golden Pine Syndrome."

There's no treasure in golden pines

BY DAVID WEDGE

WEST PALM BEACH — Golden Pine Syndrome, formally known as South Florida slash pine decline, is present on practically every golf course in Florida but little is being done about it. The last study in South Florida was done by Dr. Roger S. Webb at the University of Florida and was published in Soil and Crop Science Society *Proceedings* (43:34-35, 1984).

GPS is not a disease as such. It is a failure to thrive

Healthy trees show deep green color

Trees in transition lose needles

Deep gold is evident in advanced stages

because its natural environment has been altered by humans.

Studies from Florida to Virginia show that pines of all types are particularly sensitive to changes in their environment. In south Florida, the South Florida slash pine (*Pinus elliotti*) and the sand pine (*Pinus clausa*) are the species that seem to show the most sensitivity to human intrusion.

The syndrome is initially seen as a gradual yellowing of the needles. A progressive loss of second-year needles occurs over a period of several years. Finally the first-year needles become progressively more chlorotic and the loss of needles becomes more dramatic.

Eventually needles are reduced to the branch tip and tree death occurs, surprisingly often without an accompanying beetle infestation.

GPS is avoidable, however, and, in some cases, reversible.

Webb correlated GPS with commercial development of pine stands stressed by golf course, condominium and residential development along with grounds maintenance activities. Analysis of the annual growth patterns of trees killed by GPS has revealed that an immediate reduction of growth begins with construction of the golf course. Changes in grade, turf installation, mechanical damage to roots and irrigation

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It's not the water, it's what's IN the water...

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practices all play a part.

Grade changes: No tree should ever be covered above the root flare. When essential roots are covered, they die from suffocation.

According to information gathered over the past several years by Dr. Ed Gilman of the University of Florida, tree roots extend as much as three times the canopy width and within inches of the soil surface. Eventually, his work should help improve our tree-moving and maintenance techniques.

DAVID WEDGE

Notice that the only healthy pine in this stand is the farthest from the fairway.

Turf installation: Although turf itself does not damage the tree roots, it competes significantly for limited nutritional sources.

Mechanical damage: Root damage from heavy mowing equipment, soil compaction, and the application of chemicals used in turf management are not always in the best interest of trees.

Irrigation: In general, it isn't the water which creates the problem; it's what's in it. Pine trees are adapted to acid soils. Water drawn from wells deep in the limestone aquifer, or surface water flowing through underground coquina rock formations produces highly alkaline irrigation water.

Current thinking is that the raised pH in the soil destroys the mycorrhiza which are associated with the roots.

Superintendents must institute every available horticultural water-saving technique. By limiting unnecessary turf areas, planting large amounts of trees, and incorporating mulch into their landscape maintenance programs, superintendents can be green industry leaders for maximizing their resources.

. . . And here are some things you can do about it

Summer is an ideal time to institute some tree-care practices that may improve the beauty of your golf course, reduce water consumption and reverse early GPS-affected trees. Here are a few suggestions:

1. **Get a comprehensive soil analysis** of the areas near planned pine restoration sites.
2. **Leave native understory** plants undisturbed near pines. Where turf already is present, kill it off to the drip line of the tree. Mulch with pine straw, pine chips or cypress chips (in that order of preference) and allow the natural accumulation of pine needles under the trees. Interconnected groups of pine trees with mulched areas facilitate mowing and maintenance.
3. **Fertilize** in proximity of pine trees only with acid-forming fertilizers to prevent a rise in soil pH.
4. **Pines injured** during the clearing process should be sprayed with an appropriate insecticide.
5. **Downed trees** should be chipped and, after fumigation, these chips can be used as mulch to interconnect large tree groups.
6. **Limit irrigation** or deflect it from pines. Only golf courses have the ability to grow algae four feet up the trunk of a pine tree.
7. **Mulch** does so many things for the landscape: it cools the rootzone and improves water retention in unirrigated areas even during drought. Roots are very sensitive to changes in temperature and mulch insulates the rootzone. Mulch encourages microbial activity and soil composition; it breaks down and releases natural organic acids, lowering the pH level. Not only does it control weeds, it fights compaction by providing shelter for soil organisms that live under natural leaf litters. And mulched areas provide beautiful color contrast.
8. **Schedule winter injections** into the cambium by a trained professional arborist. Studies have shown that injections do work when they are done correctly.