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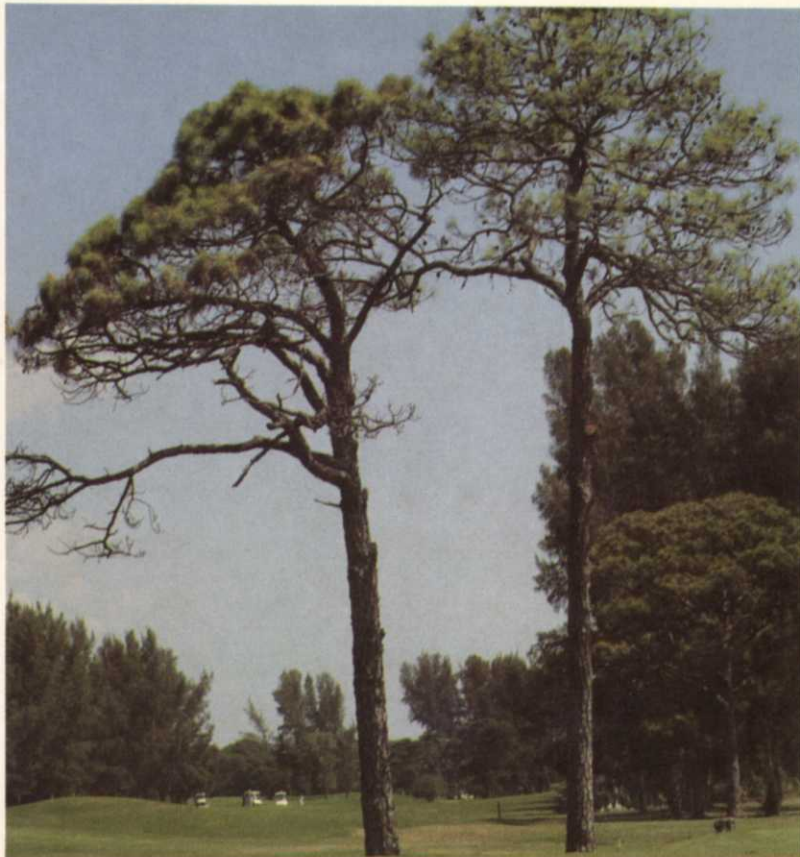
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DAVID WEDGE

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

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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 progres-

sive 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.

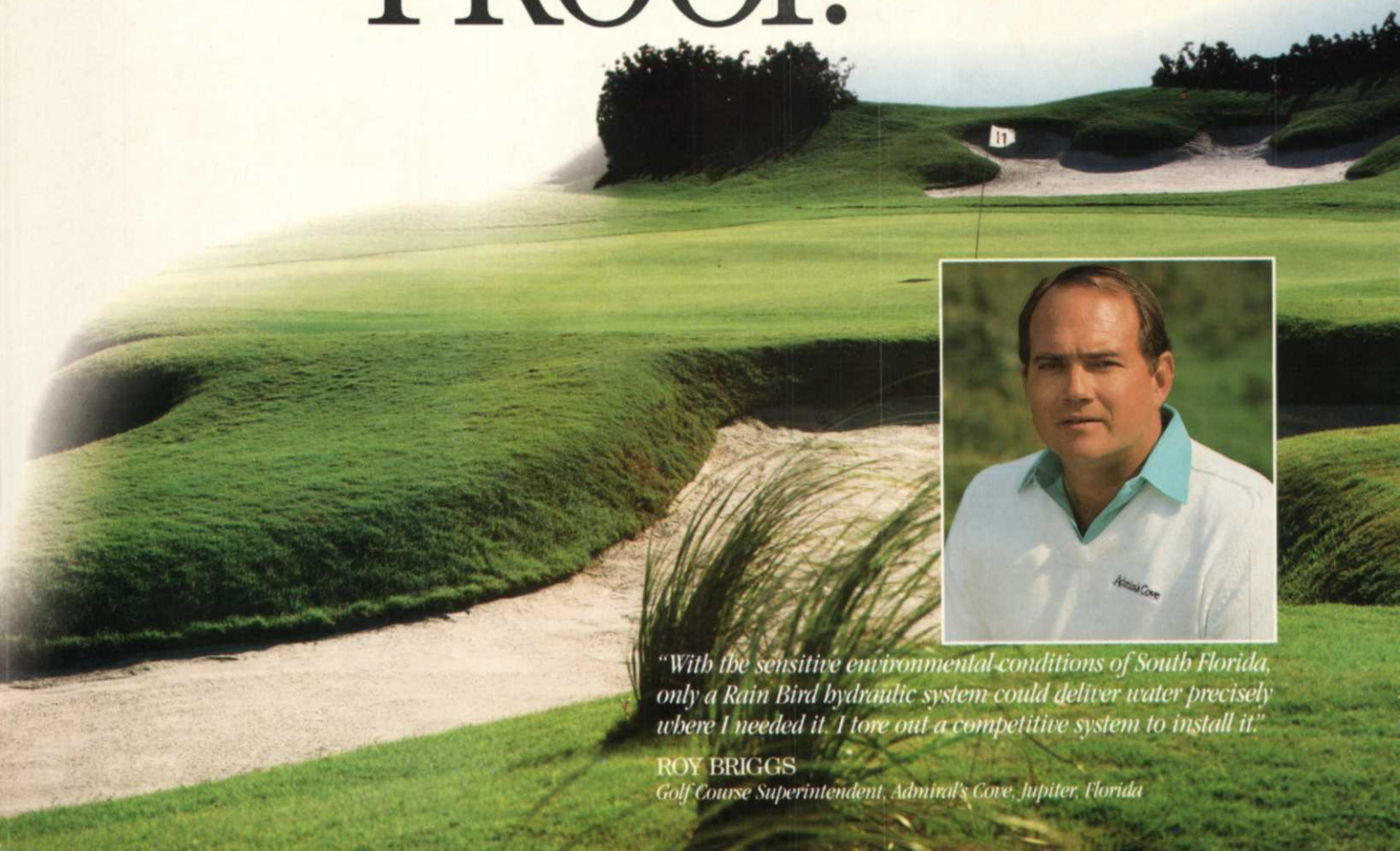
Eventually needles are reduced to the branch tip and tree death occurs, surprisingly often without an accompanying beetle infestation.

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

(Please see IT'S NOT, page 64)

PROOF



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Golf Course Superintendent, Admiral's Cove, Jupiter, Florida

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

(Continued from page 63)

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.

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.



DAVID WEDGE

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

... 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.



DAVID WEDGE

The jacaranda is planted in more locations in the world than any other flowering tree.

Tree conference draws 25 experts

WINTER HAVEN — Landscape architects, tree consultants, arborists and landscape maintenance professionals from around the world attended the 10th annual Menninger Sunbelt Tree Conference at Cypress Gardens April 16-19.

Among the 25 speakers were:

- Roberto Burle Marx of Brazil, world renowned for his use of flowering trees in landscape design.
- Dr. Henry M. Cathey, director of the United States Arboretum, who discussed "Tough Trees for Tough Times" and the new U.S. Department of Agriculture hardiness zone map.
- Donald C. Wileke, director of the American Forestry Association and chairman of the Minnesota State shade tree advisory committee who discussed the greenhouse effect.
- Dr. Nina Bassuk of Cornell University, who spoke on "Tree Stress in Urban Areas."

The conference concluded with a three-hour study tour of Bok Tower Gardens in Lake Wales, led by its director, Dr. Jon Shaw.

Superintendents interested in sending a staff member who specializes in tree care to next year's conference should contact David Wedge, 1044 Macy St., West Palm Beach, FL 33405; phone 407-588-0664. Cost will be about \$350.



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BUSINESS & AGRONOMY

Tiny wasp 'promising' against some roaches

BY DARCY MEEKER

GAINESVILLE — A little wasp about the size of two fleas strung together shows promise as a biocontrol for cockroaches and palmetto bugs, says a University of Florida scientist.

The wasps lay their eggs on roach egg capsules and "parasitized" 100 percent of the roach eggs found in dark locations in test kitchens, said Dr. Phil Koehler, an entomologist with the UF's Institute of Food and Agricultural Sciences.

"One of the nice things is that this wasp prefers all the dark places that are hard for us to spray, like inside walls and behind kitchen cupboards," Koehler said. "People could have these living in their houses and

never see them."

The wasp "stings" only roach eggs, not people, he emphasized.

In earlier research with graduate student Brian Hagenbuch, about 600 wasps were released per week for seven weeks in test kitchens. By the end of that time, wasp larvae infected over 93 percent of roach eggs in and on cabinets and on the floor. In another month, infection rate was over 97 percent except on the ceiling. The research is to be published this fall in the *Journal of Economic Entomology*.

Unfortunately, the wasps are of no use against the pesky little German roach which protects its egg case by carrying it around. Nor are they effective against the Asian

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roach, another egg case carrier.

"Some of our roach problems may be the result of generally applied pesticides," said Koehler. "If you do a lot of spraying, you may be giving yourself a worse roach problem in the end by destroying roaches' predators and parasites. Where we stop spraying, we may be able to re-establish these wasp biocontrols.

"We got our colony of the wasps (*Testasichus hagenowii*) when they appeared in a university lab in 1986 after it switched from sprays to a bait to control roaches," said the IFAS extension entomologist. "Baits do not attract or kill most of roaches' natural enemies. It would be interesting to know how much their effectiveness comes from buildup of natural enemies like the wasp."

One way to distribute the wasps would be to release clouds of them in the spring on roaches' overwintering spots.

"Usually there's one palm tree or other

gathering spot that has thousands of roaches in it, that serves as a roach source for the whole neighborhood," said Koehler, working with scientists at the "Insects Affecting Man and Animals" Laboratory, a Gainesville outpost of the USDA Agricultural Research Service.

There's a lot of research that must be done first, however, Koehler said, and with little grant money available for roach biocontrol, the project depends on grad student interest.

"Luckily, Juan Correa Curbelo from Puerto Rico has decided to do his Ph.D. on the wasp, even though we could offer him no support.

"We've just been trying to maintain the colony until we could get somebody like him in here," Koehler said.

Curbelo will work on faster ways of raising the hagenowii wasps and researchers will see if its pupae (an encapsulated resting stage between worm-like larvae and



DARCY MEEKER/IFAS

Dr. Phil Koehler of the University of Florida's IFAS holds a vial of roach-marauding wasps.

free-flying adult) could be freeze-dried and distributed like a pesticide.

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PURDY FAMILY

It was a 'Purdy' good experiment...

OVIEDO — Dew may not be dew, but doing the work to find out why turned out to be worthwhile for the 12-year-old son and namesake of Duda Sod's general manager of North Florida sod farms and foliage.

Lloyd — “everybody calls me ‘D’” — Purdy III, a sixth-grader at Oviedo's Jackson Heights Elementary School, won first place in botany for his grade level at the Seminole County Science Fair with a project based on the article in the Fall 1988 issue of *The Florida Green*, “Dew is Not Dew” by Tom Mascaro.

“When my dad brought the article home, I thought it was kind of interesting,” said “D.” “I mean, I

Lloyd “D” Purdy accepts the first-place trophy for sixth-grade botany projects in the Seminole County Science Fair. Purdy's project was based on an article in The Florida Green.

wondered what the stuff was if it wasn't dew. So I just sort of duplicated the experiments in Mr. Mascaro's article.

“And they came out just like he said they would.”

“This is about the fourth year he's done Science Fair projects — all the kids have to do them every year — but this is the first time he really got interested,” said the elder Purdy. “I think it's because the results weren't predictable and he was able to teach others something they didn't already know.”

The project was based on three liquids — dew collected off the windshield of the family car, tap water and exudate gathered quite laboriously from the grounds at Tusawilla GC in nearby Winter Springs.

“That's the only part that wasn't always fun,” said the youngster. “Some of those mornings, it got

(Please see page 70)



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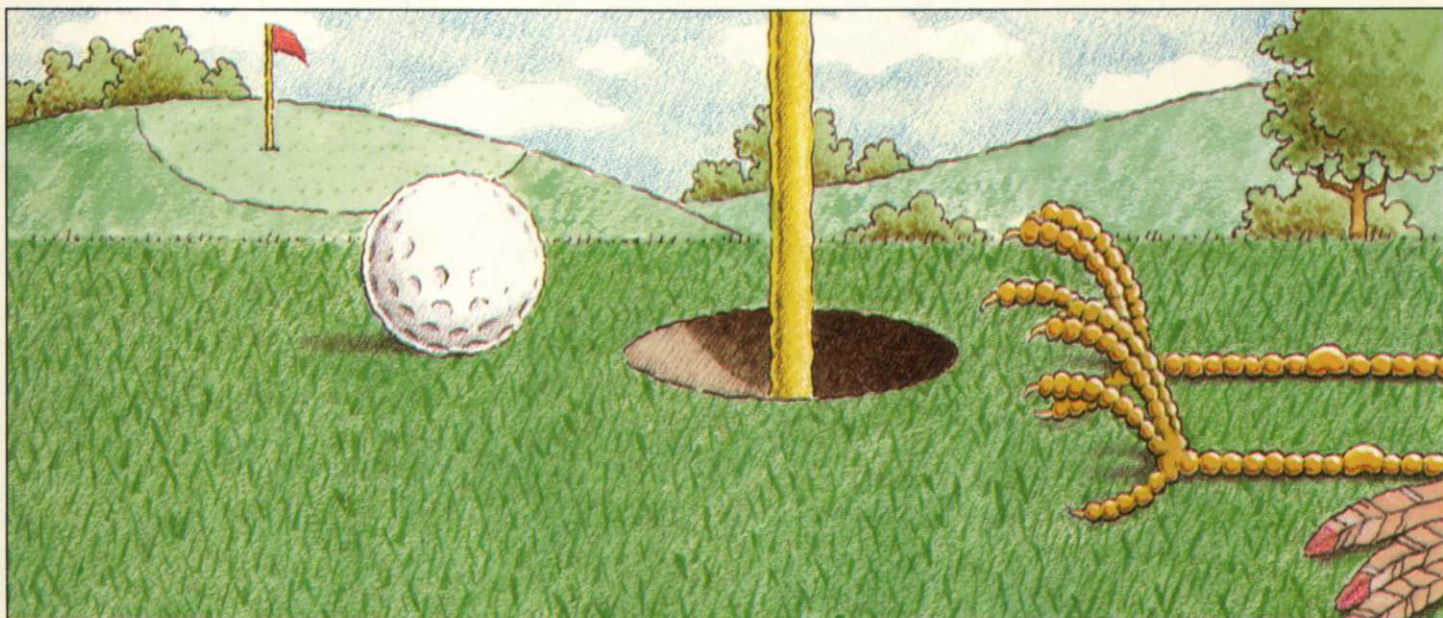

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THE FLORIDA GREEN / SUMMER 1989



'One of the neat things is that he kept working with the experiment right up through the time he took it to the state Science fair' **-Sixth-grade science teacher**

pretty cold."

"D" proved that exudate, the liquid found on turfgrass in the morning that most people call "dew," differs significantly from real "dew," condensate formed by the overnight contact between moist air and cold objects. Among other things, he showed that exudate grows mold much faster than either of the other liquids.

"One of the neat things is that he kept working with the experiment, right up through the time he took it to the state Science Fair in West Palm Beach," said Catherine Elder, Purdy's sixth-grade science teacher. The soft-spoken youngster, who

plays trumpet in the school band, takes piano lessons and is on the soccer team, also wrote to Mascaro, thanking him for providing the foundation for the prize-winning project.

Purdy did not win any major prizes at the state level, but he was competing in the middle school category with seventh and eighth graders.

"He used excellent scientific method," said Donna Poniatowski, a science teacher at Oviedo High School and Seminole County's Science Fair coordinator. She ac-



PURDY FAMILY

"D" won a portfolio from the University of Florida at the state-level Science Fair in West Palm Beach.

companied Purdy to the state contest. "It was an excellent project but there were 400 other entries at his level and two-thirds of them were older than he."



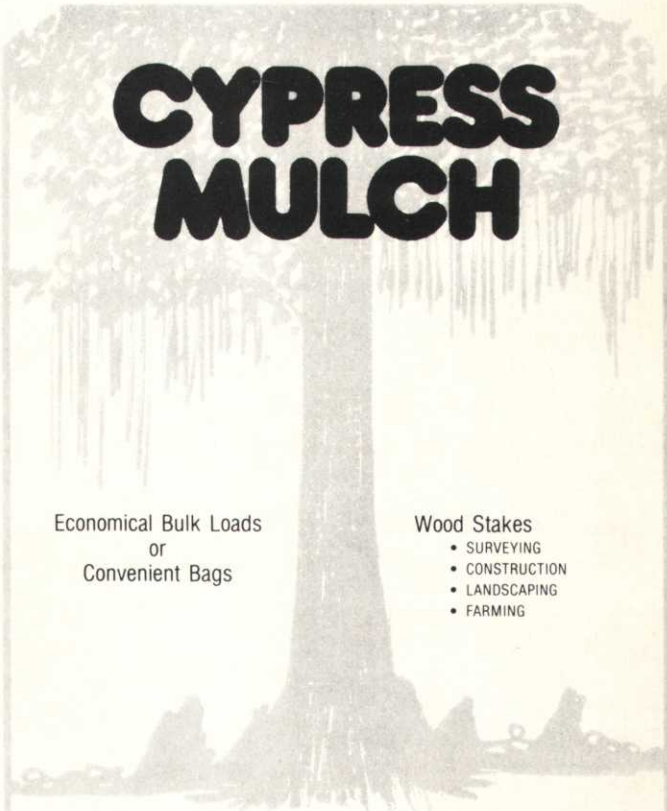
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