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# CONTROLLING MOLE CRICKETS

Mole crickets are the number one turf pest problem in Florida. They can actually kill the turf if not controlled in time.

Research at the University of Florida, Institute of Food and Agricultural Sciences (IFAS) shows mole crickets prefer to run through bare areas rather than through grass. The grass most often damaged is bahia, but they can damage or kill any of our grasses.

The most noticeable signs of mole cricket activity are fresh runs and piles of soil in the turf areas. Walking across infested areas, the turf may feel soft and spongy.

Since mole crickets are not native to the United States, controlling them is very difficult. There are no natural parasites and few effective predators to help reduce the population (75 armadillos or 125 skunks per acre may offer potential control, but most people do not like their damage or smell).

We have to use pesticides as our most effective weapon against this pest. Proper timing of the pesticide applications can make control easier and more effective.

To properly time our pesticide applications for control of mole crickets, we need to understand the life cycle of the pest. There is only one generation of mole crickets per year in north Florida and there can be two generations in central and southern Florida. They spend their whole life in the soil except for night time feeding on the surface and in the spring when mating and dispersal flights occur.

Mating and dispersal flights are occurring or will soon be occurring (depending on the area of the state). During these night time flights, these insects are attracted to lights. Lighted turf areas (even those lighted by street lights) are more likely to have mole cricket problems than those in dark areas.

Male mole crickets die after mating with a female. Most female mole crickets lay their eggs in late April and May in our area and then die. Some of the females will live and lay their eggs in late summer or early fall, but they are the exception, not the rule.

The eggs begin hatching in approximately two weeks to produce the next generation of this pest. We can reduce their damage by killing most of the young insects as they hatch.

The most effective control program for mole crickets is to apply Oftanol during May or early June. Oftanol may be commercially applied as a liquid or 5 percent granular material or as a 1.5 percent granular by homeowners.

Regardless of who applies the Oftanol, it should be watered into the soil immediately after applying it with

approximately one-half inch of water.

Research by IFAS entomologists indicated a May application of Oftanol gave season long control of this pest under ideal conditions. Heavy rainfall will leach the material down into the soil and shorten the residual control offered.

If you are unable to apply Oftanol in May or early June, plan to use an alternative control program. There is only a six to eight week period when Oftanol gives us satisfactory control of this pest.

Alternative control programs include using baits during the summer and fall or contact materials almost any time during the year.

Mole cricket baits are most effective when the insects are small and therefore should be applied during July, August, and September. Baits may offer some control at other times of the year, but the most effective control is during this time. For best control, apply baits late in the afternoon when no rain is expected and no water should be applied.

The mole crickets come to the soil surface and feed on the material at night. Watering the bait into the soil reduces its effectiveness.

Once mole crickets have reached adult size in late summer or early fall, contact materials are the most effective control available. Mocap and Sarolex are the most effective contact materials currently on the market. These materials must be applied to home grounds by a commercial company. Both materials should be watered into to soil with approximately one-half inch of water to give effective control.

Dr. Don Short, Extension Entomologist, has received many contacts concerning the use of Orthene for mole cricket control. He says the reports indicate it may be effective for short term control if applied at 3 to 5 pounds of active ingredient per acre. It should be applied to soil that is moist from rainfall or irrigation late in the afternoon. Orthene has a very short residual and should be used in combination with Oftanol in your control program.

With any of our contact materials (Oftanol, Mocap, Sarolex, or Orthene), we can increase the effectiveness of the pesticide if the soil is moist before application of the pesticide. The pesticides will penetrate into the soil better if it is moist and it is easier to water in after the application.

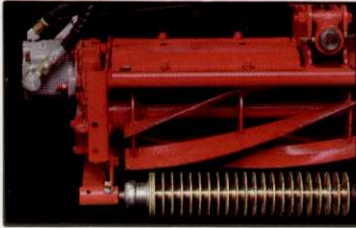
Remember, with any pesticide, read the entire label before applying the material and follow all label directions.

IFAS researchers are looking at several parasites that have been collected in South America where mole crickets are native. These include some nematodes and fungus diseases which attack mole crickets. We all should realize that our pesticides are just helping us buy some time until we can find effective, economical biological control of this pest. ■

*from Florida Turf Digest, June 1986*

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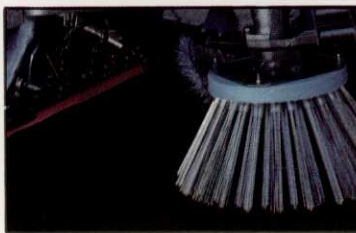
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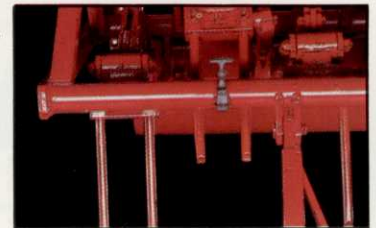
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# AN EXPERT SPEAKS:

## A Talk With A Horticulture Extension Agent

By: Cheryl Jones

Thomas Teets, a Horticulture Extension Agent with the Palm Beach County Extension Office of the University of Florida graciously gave up some time during his busy, busy day to talk about some of the problems faced by area golf course superintendents, and what is being done to try to solve them.

**Q. What are the worst problems facing area golf courses?**

**A. Pine Tree Decline** is probably the most serious problem we have on golf courses right now. It's caused by a couple of different things. One is now construction areas. What happens is heavy equipment runs over the roots of the pine trees. It compacts the soil badly. Pine trees have a very weak root system. If you do any compacting to the roots, you damage them badly, and the pine trees will either decline slowly, or the Pine Bark Beetles will attack it and it will die quite rapidly. We'll get back to Pine Bark Beetles.



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The other area where we see pine tree decline is the more classic areas on golf courses, where they irrigate a lot. Most of the water has a fairly high pH (8 or 8.5). Constant irrigation with this type of water causes the soil to become more alkaline. Pine trees normally grow in a low pH soil (acidic), and this reduces the efficiency of the trees. Then we see a lot of other deficiencies, particularly iron and manganese, which will cause the tree to yellow and slowly die. Sometimes in this situation the Pine Bark Beetle will attack and sometimes you don't see any Pine Bark Beetles - it will just slowly decline and die.

**Q. Does a golf course encourage shallow rooting?**

**A. Excessive watering** definitely causes shallow rooting because there's no real need for the tree to have really deep roots, because they have all that water constantly being put-on. High fertilization, particularly high nitrogen fertilizer, also is detrimental to the root system. It's a hard situation when the grass needs one thing and the tree needs something totally different.

**Q. Is there any way around it?**

**A. What we're recommending** is if you have a tree that's just starting to yellow, and it hasn't progressed too far, to apply sulphur around it every two or three months and stop watering the area. Concentrate the water on the fairways, tees, and greens, and in the rough where the pine trees are — just don't water it. Let the pine needles fall off and decompose on their own. Some golf courses have even gotten to the point where they just kill off those areas. They spray Round-Up to kill the grass and let the area go back to a natural state. The best thing you can do for a pine tree is NOTHING — don't water it don't fertilize it — maybe apply a little sulphur to it.

**Q. Driving out towards Indiantown, we saw pine trees yellowing no where near golf courses and T.L.C. Why?**

**A. In those situations** it's probably Pine Bark Beetles. The only thing you can really use if you catch a tree that's just about to get it is Lindane; it MIGHT help. You have to be very careful to spray up and down the entire tree and all the branches. It's a hit-and-miss proposition, and very expensive. But if it's a tree you've got to save — a backdrop to a green, for instance — you've almost got to do that.

**Q. How long has this problem been around?**

**A. It's been going on** for at least five or six years. But some golf courses are just getting old enough to notice it because it's a slow process. It usually shows up around the edges of the fairways first and progresses outward.

**Q. What's another problem golf courses are faced with?**

**A. Lethal yellowing** is a problem that we've had for years. The majority of palms that have been really

(continued on page 16)

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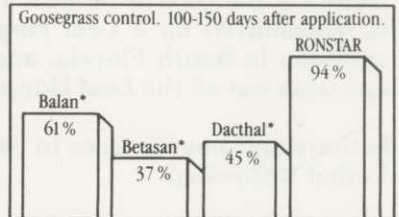


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(continued from page 14)

susceptible to it have been wiped out. There's still some around that haven't gotten it yet. The most susceptible were the Jamaican Tall Coconuts, and they're pretty well wiped out. What we recommend now is if golf courses do put coconut trees in, to use the Malayan Dwarfs, preferably the green variety. A new hybrid called Maypan is a cross between a Malayan Dwarf and a Panama Tall. It's a good tree — a more robust tree with good hybrid vigor. It's a little higher in stature than the Malayan Dwarf.

Another tree that's susceptible to lethal yellowing, and is still being planted is the Christmas Palm. It's fairly subtle when it dies — not a bright yellow like the Jamaican Tall; it just loses lower fronds until all you've got left is one spear sticking up. What we recommend that people replace these with is a Solitaire Palm. It grows a little bit taller, but is basically the same stature.

Q. Can you give me any background on lethal yellowing?

A. What they've found about lethal yellowing is it's a micro-plasmal-like organism. It is not categorized as a virus or bacteria or fungi. It's closer to a virus, and is transmitted by a Leaf Hopper. They are fairly common in South Florida, and there's no way you can wipe out all the Leaf Hoppers.

Q. Is there any way for trees to develop a resistance to Lethal Yellowing?

A. A tree is either naturally resistant or it's not. There are some levels of resistance — certain trees like the Queen Palm is never reported as getting Lethal Yellowing. However, there are trees like the Jamaican Tall Coconuts that are extremely sensitive to it. Even the Canary Island Date Palm, commonly used on golf courses, is susceptible to Lethal Yellowing. If a golf course still has the Jamaican Tall, and they're still in fairly good shape, it is possible to inoculate those trees with an antibiotic. This will keep the symptoms from showing. The trees may have Lethal Yellowing, but as long as you use an antibiotic on a yearly basis it will forestall any symptoms from showing.

Another area where we're having problems is where people are planting Canary Island Date Palms. There are a lot of problems with Palm Weevils on the newly planted trees. What you need to do is, where you get the tree, inspect it carefully and make sure that it has been properly tied so the bud is not injured. Treat the tree with Lindane and copper when they're first planted, then periodically, once a month, for four to six months. It's important to thoroughly drench the bud of the tree. If the bud has been damaged at all the Palm Weevil will really attack it. Studies are currently being done by Robin Giblin-Davis in Fort Lauderdale to determine the efficacy of Oindane, Cygon, and Dursban against these weevils.

Q. A lot of worm damage was seen in Palm Beach County in '86. Why?

A. Worms were extraordinarily bad this past year . . . Loopers, Army Worms, Web Worms . . . any kind of caterpillar was bad this year. The reason they were so bad was it was warm and wet for such a long period of time, creating perfect conditions for them to reproduce. If golf courses sprayed, it rained and the spray got washed off. It was almost a losing proposition to try to control them. About the best thing to spray for them is BACILLUS THURINGIENSIS, contained in DIPEL and THURICIDE. It's a biological insecticide just for worms. Birds are about the only natural predator worms have, and this year they just couldn't come close to controlling them.

Q. How accessible is the Extension Agent to the golf course superintendent?

A. Very accessible — all they have to do is call the office. Our service is free. Aside from the 150 or so golf courses in Palm Beach County, we also field questions from homeowners. I also do the Master Gardener Training, a 50 hour horticultural course equivalent to a college horticulture class. The Parks Department falls within my responsibilities, from trees to ballfields, inspections and advice. There's one other urban horticulturist in the Extension Office (at the time of this interview) with a third hired to start working soon (by publication). The Palm Beach County office is open from 8:30 AM until 5:00 PM, five days a week, for any one in need of our services. ■

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The installation of the MAXI® III System at Meadowbrook Golf Club in Gainesville, Fla. marks the shipment of the 100th unit of Rain Bird's state-of-the-art golf irrigation control system. The Meadowbrook system, which recently was put into operation, controls irrigation of the course's 86 acres.

"We wanted to use the minimum amount of water on the course, and the only way we could accomplish this was to use a MAXI System," explains Chuck Garrett of Florida Irrigation Supply, the Rain Bird Golf Distributor that supplied the irrigation equipment for the job. "Water use is becoming a critical issue in Florida so we wanted to use the absolute minimum amount of it, yet still maintain the course in beautiful, tournament-quality condition."

In addition to the MAXI, which runs 22 satellites on the golf course, the system has 400 pressure regulated Rain Bird rotors to keep the layout green and lush all year long. Steve Smyers, the course's golf architect, has designed a very challenging, championship caliber golf course. Superintendent Bob Baidy oversees maintenance of the course.

Meadowbrook Golf Club, which encompasses 155 acres, eventually will comprise a club house with pro shop and approximately 500 condominium units in addition to the golf course. The MAXI System also will be used to irrigate the condominium and common areas. Charles Hippleheuser of Irrigation Construction Management designed the golf course irrigation system. Moore Golf, one of the nation's top golf course builders, served as the project's contractor.

The sophisticated MAXI system permits scheduling of stations on a satellite stand-by module to operate in any sequence, at any time. "The MAXI was selected for the job because it offers optimum flexibility in programming watering schedules," Smyers explains. "We also had to take into consideration water and power usage as well as labor. I knew the MAXI was the right control system for the job."

The MAXI III uses an IBM Personal Computer to program and execute watering schedules. Additionally, the system can be used to operate a number of other necessary functions such as lighting and security. The control system, which is easy to program and operate, can reduce water and power consumption by up to 40 percent.

Other MAXI features include: no-delay repeats, controller or system water budgeting, variable repeats, telecommunications and sensor capabilities and moisture level indication. The system also can be programmed for special functions such as cooling, syringing and fertilization. ■

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# Increase of Rabies In Wildlife Threatens Public Health

By: Barbara Bobzin

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GAINESVILLE — A recent increase in the spread of rabies in Florida wildlife poses a threat to public health, and efforts to control the disease in wildlife have been marginally effective at best, according to a scientist at the Institute of Food and Agricultural Sciences (IFAS) College of Veterinary Medicine.

Michael Burrridge, chairman of the IFAS department of infectious diseases reports that laboratory-confirmed cases of rabies in Florida wildlife increased by over 150 percent during the last decade.

“Over 85 percent of all laboratory-confirmed cases of rabies in the state are seen in wild animals,” says Burrridge. “With Florida’s rapid land development, more and more people and pets are placed in the midst of potentially rabid wild animals. In almost every case where a pet is infected with rabies, the source of virus was a wild animal. In the U.S., rabies virus is rarely spread between domestic animals,” he says.

Attempts to control rabies in wildlife have centered on reduction of their populations by shooting, poisoning or trapping, and have met with marginal success. Research, notably in France and Canada, is exploring the potential of immunizing free-ranging wildlife, as an alternative to population reduction.

Although there have been no reported human cases of rabies in Florida since 1948, the virus is still considered a threat to public health. Each year in the U.S. 20,000 to 30,000 persons are treated for exposure to rabies, according to *Morbidity and Mortality Weekly Report*. Burrridge says that exposure typically results from animal bites, although handling sick wild or domestic animals can also result in exposure.

The risk of an exposed person developing rabies depends on many factors, such as infected animal’s species or the location and severity of the bite. For example, rabid foxes have a higher concentration of the virus in their saliva than dogs, skunks grasp hold of their victim more tenaciously than dogs and a head bite is potentially more dangerous than a bite on a leg or arm.

In Florida, raccoons have contributed to this growing threat to animal and public health more than other species. “Raccoons in particular have adapted well to the state’s increasingly urban environment,” he says. “77 percent of all rabies cases in Florida in 1985 were seen in raccoons.

“Available data suggests that about 20 percent of the state’s raccoon population has been infected with rabies,” — Burrridge says, “Yet, raccoons are not as susceptible to rabies infection as some other species, such as cattle and foxes.” ■

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