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*And the bad news about fire ants is...*

# New mounds producing 200 queens

**GAINESVILLE** — Fire ants have always been bad news, but the news just got worse.

A new form of fire ant colony, with thousands of queens, is spreading through the Southeast.

"It means four times as many ants and almost one solid ant nest," said Phil Koehler, an entomologist with the University of Florida's Institute of Food and Agricultural Sciences.

An IFAS-USDA study near Paddock Mall in Ocala found 30 to 40 fire-ant mounds per acre back in the days of single queens. Now, there are 5,000 mounds per acre — about every 5 feet — with 200 queens per mound.

"When a queen dies in a single-queen nest, the whole nest dies," said Mike Glancy

of the USDA's Agricultural Research Service in Gainesville.

"With multiple queen mounds, they just scatter. The workers do not have loyalty to a single queen, and will accept any queen. The more the merrier."

Multiple-queen fire ants live in greater concentrations and are more aggressive in hunting for food than single-queen fire ants. They have been known to attack sick people in hospital beds and the nipples of nursing goats.

Queens from multiple queen nests fly 8 to 10 miles on their mating flights, compared to half a mile for queens from single-queen nests.

"This is a more aggressive insect, which means more human contact, which means more health problems," Glancy said.

Bill Becker, IFAS safety expert, says that about one person a year dies of allergic reaction to fire ant stings in Florida.

Fire ants also cause trouble by eating foam expansion joints in highways and shorting out air conditioners.

Multiple queen fire ants were discovered in 1973 in Mississippi and then were discovered in Ocala and Texas in 1983. Since then, multiple queen colonies have spread throughout Florida and are found all over the Southeastern United States.

Fire ants were accidentally imported from Brazil and Argentina in the 1920s and 1940s in the ballast of ships.

Koehler said multiple-queen colonies are reported in Brazil, too, and as man kills off single-queen nests, it clears the way for multiple-queen nests.

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*A poorly designed irrigation system can send a superintendent's...*

# Six-figure budget down the drain

MADISON HEIGHTS, Wis. —Golf course superintendents who spend six figures on sprinkler irrigation systems have learned — some the hard way — that the quality of the system's design can save them hefty sums over what appear to be less expensive systems.

That's the conclusion of Rick Manley, a certified irrigation designer for Century Rain Aid, which operates four outlets in the Great Lakes region and seven in Florida.

"Many superintendents have learned that a 'lowball' system they thought was a bargain turned out to be a bad deal that ended up costing them a lot more in the long run," said Manley. "That's particularly evident since the drought of 1988 put huge demands on poorly designed systems that couldn't stand up to the strain."

The result: yellow fairways, faded greens, parched roughs — and unhappy greens chairmen, club members, golf course owners and players. And you can add high repair bills, inefficient and wasteful operation and early replacement of major components.

Some sprinkler irrigation distributors include design as a service to golf course superintendents at no charge. However, Manley warns against the temptation to bypass professional design and rush to buy less expensive, inadequate components

some companies sell to make a quick deal.

Manly says that golf course superintendents should educate golf course owners and executives that good design is a cost-saving feature over time. It creates a system that delivers optimum operating efficiency, reduced maintenance, repair and replacement expenses and assures greater longevity of components, says Manley.

"Sometimes irrigation salespeople want to close the sale by offering the lowest price," says Manley. "Golf course superintendents should develop a healthy skepticism of quick-and-cheap sales tactics. Buying that way hurts in the long run because it doesn't give the superintendent the insurance he should be getting."

By "insurance," Manley means margins that take into account greater-than-average water demand and strain on a sprinkler irrigation system.

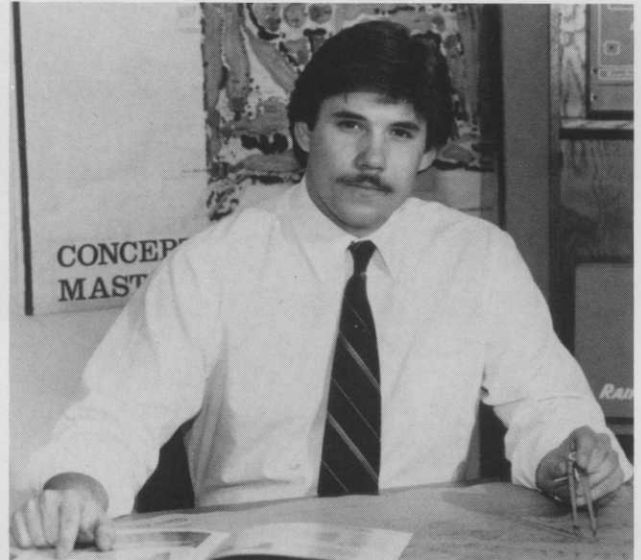
Last year's drought — the worst in 100 years — has proven his point many times over, says Manley, an ex-Marine and sec-

ond-generation irrigation designer with 10 years of experience.

Superintendents who bought sprinkler irrigation designs calling for the least capital cost learned the hard way that buying *value* is more important than buying *price* only.

Overloaded pipe wears out easily, overloaded pumps burn out early or consume unusually high amounts of electricity. Burst pipe, fittings and valves also add to the

*(Continued on page 46)*



*Rick Manley is director of technical design for Century Rain Aid*



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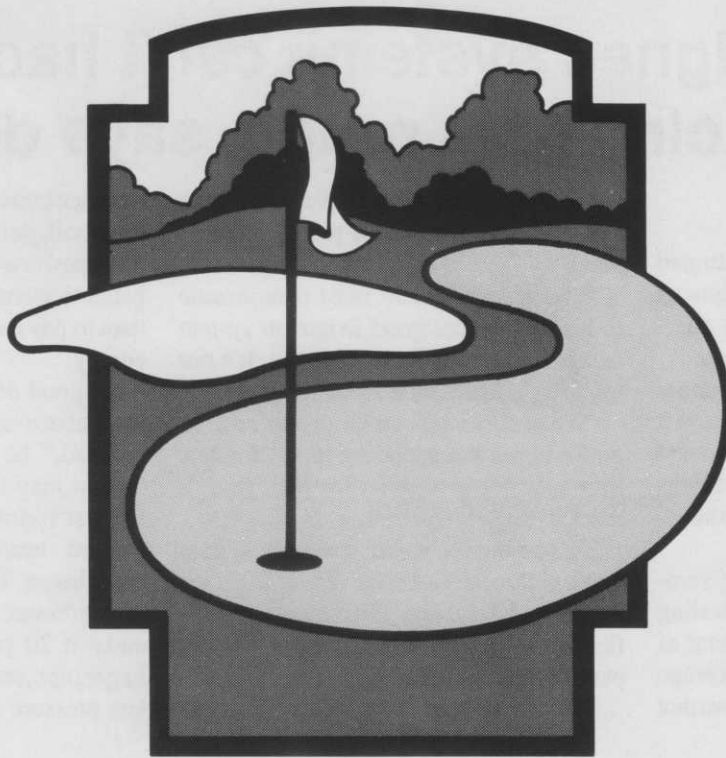
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# Poorly designed systems can't hack it when the going gets rough, says designer

(From page 44)

headaches.

"If the drought of '88 demonstrated anything," says Manley, "it showed that a poorly designed system can't hack it when the going gets rough.

"And in the end, the golf course superintendent who was happy to save a few bucks up front was disappointed and angry that he has lost all his savings and more — plus he has inherited headaches he can do without.

"With golf courses, everything's amplified," says Manley. "You're dealing with 10, 15 to 20 times the amount of water you deal with in the average commercial installation. It becomes that

much more important to make sure the job is properly designed and properly calculated.

"The superintendent must demonstrate to his bosses that good irrigation system design is worth its weight in gold. It's our job to help him demonstrate the point.

"When customers on large jobs such as golf courses are spending in six figures, they look for protection for their investment.

If a pump is too small, it works too hard and it will break under the strain. If it's too large, it's fat and lazy, delivering a low efficiency of 50 to 60 percent, versus 70 to 80 percent, which is ideal."

Adds Ben Taliaferro, Century's execu-

tive vice president, "If you use a pipe that's too small, you have to pay for it with more horsepower over the life of the system. It's better to spend more on pipe diameter once than to pay more on a continuing basis for energy.

"A good design loses no more than 20 percent of available pressure under highest demand," he adds. "A poorly designed system may lose 30 to 40 percent to the farthest sprinkler head. So we start at the farthest head and work back to the pumphouse. If we lose more than 20 percent pressure, we change the system to make it 20 percent or less. We can use larger pipe, smaller nozzles or loop lines so less pressure is lost."

## Some things to consider when designing a system

Understanding factors such as soil type, water velocity and pressure are key to convincing those paying the bills of the cost-effectiveness of professional sprinkler irrigation design.

The factors to consider when designing a sprinkler irrigation system, according to Manley:

- **Auto CAD** — The most advanced computer-aided design for sprinkler irrigation systems. Computers with auto CAD digitize elements of sprinkler irrigation designs for quick turn-around and accuracy.
- **Coverage** — uniform coverage is vital to turf health. Close-in coverage of gear-driven heads can be spotty; Impact rotors can be placed farther apart and still get uniform coverage.
- **Distance** — How far water must be moved through the system. Maintaining pressure over distance is crucial to efficient design, particularly on lower-pressure systems.
- **Electricity** — Location of electrical power and how much is available is important in larger installations because it dictates pumphouse location.
- **Looping** — Running a circuit of piping instead of a straight line from the source reduces pressure loss and allows the use of smaller pipe.
- **Pressure** — Force of the water through the system.

- **Soil type** — Sandy soil accepts water quickly but loses it fast so that more frequent watering is needed. Loam, or decayed organic matter, receives and holds water most evenly. It is usually found in the topsoil.
- **Surge** — the rush of pressure when a pump-driven system is first activated. This rush can raise pressure by up to 300 percent and threaten piping, heads and connections if the system is under-designed.
- **Throw** — the distance a sprinkler head propels water. For large installations, impact sprinkler heads are recommended because they lose less pressure through the sprinkler body and give longer throw than gear-driven heads. Their lower trajectory minimizes loss of throw due to wind drift and delivers more uniform distribution.
- **Velocity** — The speed of water through pipes. It is regulated so as not to exceed five feet per second.
- **Water location and quality** — The location of the water source in relation to the farthest sprinkler head often dictates design parameters such as diameter of pipe, openings of sprinkler orifices and horsepower of pumps. Poor water quality may require heavy duty pumps, aerator fountains to clean up algae in ponds or filters to remove potentially harmful mineral elements from water before it enters the system.

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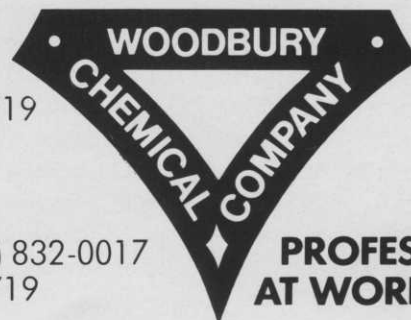
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# Florida superintendents lead U.S. in environmental audit program

BY LARRY KIEFFER

LAWRENCE, Kan. — The GCSAA's Environmental Compliance Assistance program introduced at the 1989 show is progressing "about as we had expected," according to Steve Wharton, project manager for Hall-Kimbrell Environmental Services Inc. which developed the program.

The self-audit kits are intended to give superintendents a means to identify areas of operations affected by environmental regulations and identify changes that should be implemented to achieve compliance.

As of Aug. 31, seven Florida superintendents — more than any other state — had bought the kits, which sell for \$725, Wharton said.

"This is an important program for every golf course in America because no course can afford not to assess every area of its operations," said Dennis Lyon, CGCS, GCSAA president. "Our main goal is for superintendents to develop a high degree of industry involvement — but there's also a very real payoff in dollars that superintendents will realize in improved management efficiency and reduced liability ex-

posure."

Lyon added that one fine or incident would vastly overshadow the cost of the self audit, which he termed "nominal."

The Hall-Kimbrell package does not provide any legal protection — audits in which the consultant assumes some liability for compliance can cost \$10,000 or more — but it does give superintendents an opportunity to evaluate their own practices.

"It all comes down to integrity and credibility," said the manager of one Florida facility taking part in the GCSAA program. He asked not to be identified.

"We view the self-audit as the first step. We want to be squeaky clean so we'll probably follow up the self-audit with an on-site audit."

Hall-Kimbrell will conduct on-site audits, generally for less than other consultants "because our analysis of the self-audit enables us to focus on some of the problems immediately," Wharton said. He estimated the price range at \$4,000 to \$8,500.

The company also will train employees on site for \$1,500 to \$2,500 per session, depending on the number of employees,

and subject matter.

The self-audit is a book containing more than 500 questions that allow the superintendent to report easily and concisely his practices in an answer booklet which is forwarded to Hall-Kimbrell, where it is scanned by computer.

Also included is a 30-minute video tape which outlines eight common areas of regulation and explains the audit.

Completion of the self-audit generally requires about eight hours, according to Hall-Kimbrell. Most superintendents have found it better to split the time over a week or so rather than complete the whole process in one session.

Once the computer has tabulated the data from the answer booklet, Hall-Kimbrell scientists and environmental experts prepare a detailed report on the course's practices in relation to applicable regulations. The report also contains concise overviews of regulations, phone numbers and addresses for federal and state agencies that issue and enforce the regulations and information on state programs that vary significantly from federal requirements.

The report not only tells superintendents if they are in compliance, it also helps them evaluate procedures and management practices.

The audit is not a fault-finding tool, but rather a fact-finding tool, explains Wharton.

"People may have a natural tendency to provide what they expect are the 'desired responses' rather than the honest answers. The value of the package is in the superintendent's review of the resulting reports based on actual situations."

The audit serves as a prerequisite for follow-up services that include annual update procedures. By periodically updating the audit, it becomes a management tool for continual evaluation of practices, taking into account new products, regulations and training requirements.

## Hall-Kimbrell offers seminar in Orlando

Hall-Kimbrell will conduct its second annual conference in Orlando Nov. 7-9, including a trade show for environmental protection and hazardous materials industries.

Although the conference is aimed at seven different industries, Nov. 8 will include a full day of sessions designed specifically for the golf industry, including safe pesticide handling, water quality assurance, respiratory protection program and environmental protection through self auditing.

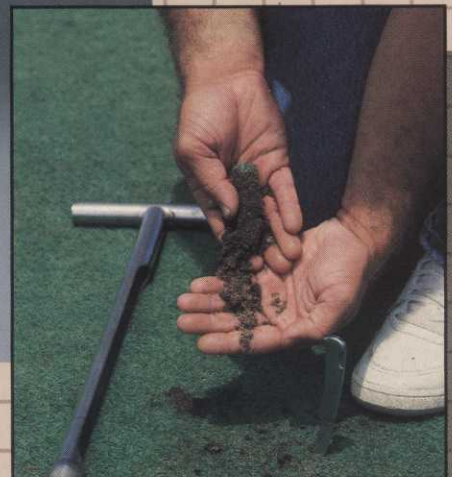
Among the speakers will be Cecil Johnston, FGCSA immediate past president, and Steven Dwinell of the Florida Department of Environmental Regulation.

Registration fee of \$195 includes a three-hour general session Nov. 7, admission to all seminars all three days, including the golf sessions Nov. 8, lunch all three days, a cocktail party Nov. 8 and breakfast Nov. 9 and admission to the trade show.

To pre-register, contact Hall-Kimbrell in Lawrence, Kan., at 800-346-2860 or 913-841-8034. Walk-in registration will be accepted on a space-available basis for \$245.



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# Just when you thought it was safe to go back into the water!



**BY LARRY KIEFFER**

LAKE BUENA VISTA — Are you prepared for disaster?

If half your course were under water — up to 8 feet in places — how quickly could you get it ready for play?

Could you do it in five days?

Oscar Miles did.

Miles, golf course manager of Butler National GC in Oak Brook, Ill., watched the rain fall and the creek rise one August weekend in 1987 until seven holes of his golf course surrendered to the torrent.

Three days before the suburban Chicago golf club was to begin hosting the Western

Open — second-oldest tournament on the PGA Tour — half the course lay beneath waters that had reached a height attained only once every hundred years.

Five days later, the course had been drained, scrubbed, rinsed, squeegeed and blow-dried by helicopters to the point that a credible, albeit abbreviated, PGA Tour event could tee off two days behind schedule.

And as soon as D.A. Weibring cleared the 18th green with his \$144,000 check, Miles and his crew immediately launched a nine-month reconstruction and recovery program that left several holes more flood-

resistant than before and the whole course much improved.

“We used the situation to make all the improvements we had been talking about for years,” Miles told 30 superintendents attending the seminar at the 13th annual Crowfoot Open at Grand Cypress Resort Aug. 6.

While it is unlikely that the peculiar meteorological, geological and hydrological conditions that created the Butler Na-