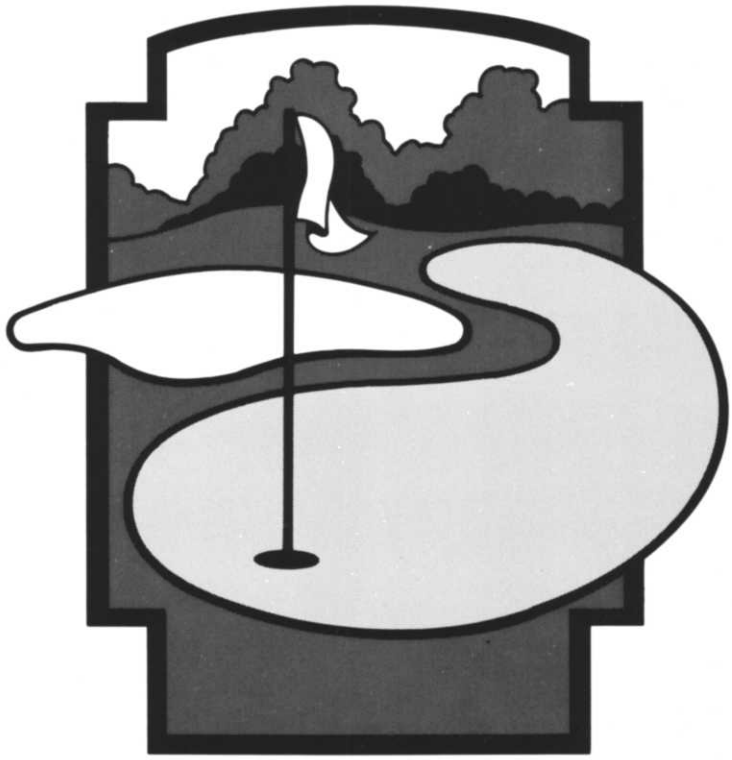

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Golf Course Mechanic: The Unsung Hero

by CHARLIE CROSS

The past ten years have brought about a tremendous change in the equipment that golf course superintendents use to maintain their golf courses. Tractor drawn, ground driven units for use on fairway turf and certain rough areas are virtually a thing of the past. The trend to use lightweight mowers in the three and five unit classification on fairway turf has been established and appears here to stay.

Golf Course Superintendents seem to be cutting all fine turf areas at lower heights, which puts a premium on a sharp, properly adjusted, well maintained machine. The person generally responsible for the overall performance of a mowing machine and other golf course equipment is the Golf Course Mechanic.

Many golf courses today have equipment inventories that easily exceed $300,000 in replacement cost. Included in the inventory are many specialized pieces of equipment which require altogether different preventative and daily maintenance. Mowers of varying types and styles, tractors, transport/utility vehicles, spray apparatus, aerators, trucks, trap rakes, weedeaters and sod cutters. The list could go on. Maintaining all the above mentioned equipment in proper operating condition sounds like a large responsibility. It is.

The majority of golf course maintenance operations need a full time mechanic. The Golf Course Superintendent doesn't usually have time and is not paid to be the hands on mechanic. The superintendent's time is to be devoted to managing and maintaining his golf course.

A qualified Golf Course Mechanic should have a thorough understanding of internal combustion engines, both two and four stroke, reel mower maintenance and adjustment, and spraying apparatus maintenance and repair. Some knowledge of hydraulic system maintenance and repair is very helpful since so many machines are using hydraulics as a power source.

The equipment maintenance area where the mechanic spends many hours should be neat and clean. A good supply of the proper tools with easy accessibility should be available. Tools should not leave the shop unless the mechanic needs them in the field.

The parts area should be stocked with often used items, plus a supply of items that habitually utilize Murphy's Law, should be kept on hand.

Finding a mechanic that meets your specifications is indeed a tough task. What is a good way to find and keep that "Great Mechanic" we are all hoping for?

One possibility is to hire a vocational school student whose schooling has covered the basics, and by utilizing local equipment dealers to train a person on how to maintain the specific equipment you have in inventory. Also there could be someone on your existing crew who with some extra effort and training could work into the position.

I feel that we, as Golf Course Superintendents, through the use of proper communication channels with our committee chairman or Board of Directors, can have the funds allocated to properly train and educate our Golf Course Mechanic. Once the Superintendent feels comfortable with the mechanic's abilities, the mechanic should be compensated adequately for his skill and efforts. After all, the mechanic's position is a very important one.

When viewing your golf course and the greens are rolling well, fairways striped to perfection and equipment breakdowns are at a minimum, remember your mechanic. He can make your whole operation run much more efficiently.

Golf Digest Names 1988's Best New Golf Courses

The Links at Spanish Bay, in Pebble Beach, California, Black Diamond Ranch Golf and Country Club in Lecanto, Florida, and Blackwolf Run Golf Course in Kohler, Wisconsin, have been named America's Best New Resort, Private and Public Courses, respectively, by GOLF DIGEST.

The sixth annual selections are announced in the January, 1989 issue.

Courses opened for play between July 1, 1987 and June 30, 1988, were eligible and voted on by a panel of 400 panelists. Seventy-seven courses were evaluated on the basis of five criteria: Shot values, playability, design balance, memorability and esthetics.

The Links at Spanish Bay was designed by the team of golf architect Robert Trent Jones Jr., golfer Tom Watson and Frank (Sandy) Tatum, former U. S. Golf Association president. The trio recreated the look, feel and playability of a grand old Scottish Links, using several holes from St. Andrews, Muirfield and other famous U.K. courses as models.

Runners-up in the resort course category were The New Course at Grand Cypress in Orlando, Florida, designed by Jack Nicklaus, and Teton Pines Golf Club in Jackson, Wyoming, designed by Arnold Palmer and Ed Seay.

Designer Tom Fazio's Black Diamond course also includes reminders from other great courses, like Pinehurst and Jupiter Hills. But the heart of the course begins on the par-3 13th, where the first of two deep abandoned limestone quarries is encountered. The course then plays more like Pebble Beach, with holes over chasms, along clifftops and down an escarpment. Fazio has now won top honors two straight years. His Wade Hampton course was named Best Private Course in 1987, and his Barton Creek layout was third.

Indianwood Golf and Country Club (New Course) in Lake Orion, Michigan, designed by Bob Cupp and Jerry Pate, and Metedeconk National Golf Club in Jackson, N. J., designed by Robert Trent Jones and Roger Rulewich, were runners-up in the private category.

Pete Dye's Blackwolf Run course has a diverse collection of holes that clearly resemble previous Dye designs. Though the course is located in the rolling meadowland and river bottom of eastern Wisconsin, the long, deep bunkers, towering mounds lining some holes and greens half hidden by ominous bunkers are an unmistakable reminder of PGA West. It also features one of the few double greens Dye has ever designed.

Second to Blackwolf Run was Page Belcher Golf Courses (Stone Creek Course) in Tulsa, Oklahoma, designed by Don Sechrest, while Michaywe Hills Golf Club (Lake Course) in Gaylord, Michigan, designed by Jerry Matthews, finished third.

Biological Pesticides Promise Opportunity to Florida Nursery Industry

by DARCY MEEKER, IFAS

A University of Florida foliage expert has a novel idea for diversifying Florida's billion-dollar nursery industry, which some experts say is close to being over built.

Lance Osborne, researcher with UF's Institute of Food and Agricultural Sciences in Apopka, sees business opportunities for growers of ornamentals and foliage plants in producing biological controls -- bugs, fungi, bacteria and other organisms which attack only harmful bugs, microbes, and weeds.

"The world's leading producers of biologicals started out in the nursery business, and now they're using their greenhouses to produce organisms for biological pest control," Osborne said. The companies got into producing beneficials for their own use, then started selling them locally.

Biologicals are a cottage industry in Czechoslovakia and other Eastern Bloc nations, Osborne said. "We're on hold here, in Florida, waiting for quality control, but many companies are interested in it."

"At the moment, we're at catch-22 -- how do you develop a product without a market or develop a market without a product?"

Nurseries are a natural starting point, both as producers and as consumers of new commercial biocontrol products, Osborne said.

Chemicals are not as desirable an option as they once were. The number of chemicals that are available is shrinking daily. Pests develop resistance to chemicals very quickly. Environmental concern and concern for employee welfare are mounting.

A number of roadblocks to commercializing biocontrol do not pertain to greenhouse production of foliage plants.

For example, you can't build a company on a product you sell only once. The citrus black fly (and the white fly that used to plague camellias in Florida) is controlled by a handful of tiny beneficial wasps released in South Florida in 1976. A spectacular success, it saves the citrus industry $9.3 million a year. It was a one-shot deal -- nobody needs any more of those wasps -- but biocontrol is not a one-time self-sustaining operation in the greenhouse environment.

Nurseries need repeated doses of biocontrol organisms for several reasons:

- They find they can't avoid some use of chemicals, which can disturb biocontrol organisms.
- As populations of pests are reduced by release of beneficial insects, the beneficials starve and must be replaced by additional releases. "In the nursery business, we aren't looking for balance, we're looking for eradication, and we want zero damage to the final product," Osborne said.

Greenhouses also make good candidates for biocontrol because they are relatively closed environments, compared to open fields.

Many in the nursery industry also know how to create the controlled conditions necessary to produce biologicals, and they have expertise about plants, bugs, weeds, and plant pathogens, Osborne said.

In addition, product value is high, so investment in the new technology can be justified.

"Of course, biocontrol organisms will have to be cleared with various agencies before they are released or sold," Osborne said, "but there is every reason to be excited about the potential of biologicals for the nursery industry."

New Lightweight Fairway Mower Draws Crowd at GCSAA Show

A new lightweight fairway mower from Jacobsen Division of Textron Inc. attracted a great deal of attention at this year's GCSAA Golf Course Conference and Show.

The LF-100 is a durable, out-front 5-gang reel mower that gives a greens-quality cut on fairways. It cuts a 100" swath at speeds up to 5mph, for higher productivity. The LF-100's heavy-duty design makes it more durable than triplex greens mowers, yet it has extremely low ground pressure for less soil compaction and healthier turf.

A new mower configuration puts the two outside reels in front of the operator, so the trimming edge is easily seen without looking back and away from the mowing path. This gives better control of overlap for increased productivity, as well as improved operator visibility and comfort. The mower configuration also provides a shorter uncut circle of grass on turns, and makes grass catcher removal and reel maintenace much easier.

The LF-100 uses Jacobsen's proven Greens King reel design, with new heavy-section blades and bedknives that give extra strength and longer life for demanding fairway mowing applications. The fully floating reels follow ground contours closely for a precise cut, and pivot through turns to eliminate scuffing of turf on the clean-up pass.

Long life, fuel-efficient operation, and low maintenance are some of the benefits of the LF-100's 22 hp diesel power plant. The smooth-running three-cylinder engine is liquid-cooled for efficient operation in demanding conditions. A heavy-duty air cleaner keeps the engine running clean for longer life.

Foot pedal controlled hydraulic lift raises all five reels quickly, and two-wheel power steering gives easy maneuverability for quick turns and efficeint cross-cutting. The four-wheel wide-track stance increases stability and makes it easier to hold a straight line, for accurate striping of fairways and athletic fields.

For more information, contact the Marketing Department, Jacobsen Division of Textron Inc., 1721 Packard Avenue, Racine, WI 53403.

Mobay Biochemistry Research Center to Expedite Product Registration Process

Bayer USA's Mobay Corporation has formally opened a new multi-million dollar Biochemistry Research Center near Stillwell, Kansas.

The 48,000-square-foot facility will be operated by Mobay's Agricultural Chemicals Division. The facility, situated on the 300-acre Mobay Research Park, is dedicated to the study of agricultural chemicals and their relationship to plants, animals and the environment. Bayer USA is the U.S. management holding company of Bayer AG, West Germany.*

Completion of this state-of-the-art facility enables Mobay and Bayer to evaluate experimental compounds, and to meet the Environmental Protection Agency's re-registration requirements for crop protection chemicals. It further provides Mobay with a modern laboratory complex that also meets current and anticipated requirements of Good Laboratory Practices. In addition, it allows Mobay to participate more extensively in an established cooperative program with Bayer and a Japanese affiliate, Nitokuno, to help facilitate the interchange and worldwide use of research data.

According to Dr. Don R. Flint, Biochemistry Manager for Mobay's Agricultural Chemicals Division, the facility houses nearly fifty research professionals, and the delicate instrumentation necessary to conduct thousands of hours of testing required before an experimental compound can receive federal registration for commercial use.

The Biochemistry Research Center is equipped to carefully trace the course, or fate, of a chemical compound through the food chain. Highly sophisticated instruments and procedures identify how plants and animals metabolize a given compound, how much of the material remains at each stage in the food chain, and how quickly it degrades. Biochemists also trace the fate of the material in the environment. Only those compounds which are proven safe to the user, to the consumer, and to the environment are ultimately cleared for commercial use.

The state-of-the-art complex features a unique modular design to accommodate the special needs of five separate research gorups: three assigned to study the metabolism and environmental fate of insecticides, fungicides and herbicides; one group specializing in synthesis of test chemicals and analytical standards; and one group responsible for contract residue data and reporting.

Facility features include a comprehensive environmental management system which brings 55,000 cubic feet of fresh air into the complex every 60 seconds. Computers provide modular control of temperature, humidity and lighting. A central atrium design provides each laboratory module with natural light. And the complex is equipped with two back-up power systems to guard against surges or utility failure.

The intricate analytical research is accomplished with the help of highly sensitive electronic instruments. The centerpiece of that instrumentation is a high resolution gas chromatograph/mass spectrometer, a powerful instrument designed to analyze molecular structure in increments of parts per billion.

The new research facility is expected to help expedite the long and costly process which takes a new product from discovery through registration and approval for marketing. It is a process which today requires from seven to ten calendar years in time, and can cost between $20 and $50 million.

That process begins at Bayer's Agrochemicals Centre in Monheim, West Germany, where researchers synthesize approximately 25,000 new compounds each year. Of that number, some 5,000 of the most promising compounds are brought to the Mobay research facility in Vero Beach, Florida for testing in the laboratory and 'micro-field' plots to identify potential uses.

The best performing of these experimental materials are next evaluated on target crop plants under expanded test plot conditions on one or more of the six Mobay research farms across the nation. Some of those compounds will also be evaluated by university researchers under carefully monitored application methods and rates.

"That's the stage at which the laboratory studies can either make or break a new compound," says Dr. Flint. "Even though a new compound may perform perfectly in field plots, it still has to successfully pass a great many biochemical and toxicological tests before it can be submitted for registration."

Specifically, EPA regulations list over 100 separate laboratory studies (plus scores of field studies) that must be completed in acceptable form before registration can be granted. According to Dr. Flint, many of these can only be performed meaningfully in certain sequences. In Biochemistry this translates to some three calendar years and some fifteen man years of investigational activity for each new compound.

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*Bayer USA Inc. is the U.S. management holding company of Bayer AG, West Germany, and is a diversified group of companies with businesses in industrial and agricultural chemicals, health care and imaging systems. In addition to Mobay, other major Bayer companies in the U.S. include Miles Inc. and the members of the soon to be formed Agfa Corporation: Agfa-Gevaert, Inc., Compugraphic Corporation, and Matrix Corporation. Together, the Bayer USA companies had sales in 1987 of $4.2 billion, or nearly 20 percent of Bayer's sales worldwide.

New Insect Growth Regulators Control Fleas Safe and Effectively

by NANCY E. DOHN
IFAS Information

This is the season for fleas, but two new insect growth regulators developed by researchers at the University of Florida make future springs and summers look almost itchless for dogs, cats and owners. Soon to be released commercially, a dose of either product controls fleas up to six months, is 90 percent effective and safer than most pesticides currently available, say entomologist Phil Koehler with the Institute of Food and Agriculture Sciences (IFAS).

A result of a joint effort between IFAS and Richard Patterson of the USDA-Agricultural Research Service, the innovative products contain fenoxycarb and diflubenzuron, Koehler said. They will be initially marketed to the pest control industry under the trade names Torus and Dimilin.

"These chemicals have the potential to revolutionize the pest control industry. Studies show they are a thousand times more effective than any flea pesticide used now, and they are the first to give long-lasting control outdoors," the IFAS Entomologist said.

While most flea products require monthly applications and break down quickly in the sun, those containing these new chemicals last up to four months indoors and up to five months outside, said Koehler. This long-term residual effect can help pest control companies provide an effective service and can save consumers money.

"And because they affect the insect's hormonal balance, they are potentially safer to humans and animals than many pesticides currently used," Koehler said.

Most flea controls work by affecting the insect's central nervous system. Insect growth regulators, however, influence the hormone production system of the biting pest, which differs from the systems of all warm-blooded animals. The one chemical attacks insects in their juvenile stage of development and the other prevents the formation of an outer skeleton, Koehler said.

Over-the-counter foggers, hand-held sprays and yard products containing the growth regulators will be available in time for next spring's flea season, Koehler predicts. Incorporating the new products into pet shampoos and daily pills furthers the possibility of a flealess future.

"These two products are going to completely change flea control, but they're just the tip of the iceberg. Five years from now growth regulators are going to be the primary means of staying one step ahead of most household insects," Koehler said.

Pestilence Unto the Pests

Biological Pesticide May Be in the Works for Sweet Potato Whitefly

by DARCY MEEKER
(904) 392-1771

A University of Florida researcher has found a fungus that kills an insect costing millions for two billion-dollar Florida industries -- vegetables and ornamental plants.

The sweet potato whitefly is resistant to most chemicals, inflicts heavy damage on plants by sucking juices, and leaves a honeydew that encourages sooty mold.

In summer 1987, Lance Osborne was rearing sweet potato whiteflies in his Institute of Food and Agricultural Sciences lab in Apopka so he could run pesticide tests. But a fungus named Paecilomyces fumosoroseus hit the colony and wiped it out before he had a chance.

Now, IFAS and USDA are sponsoring further research into the fungus as well as a small beetle that attacks whitefly eggs "like a vacuum cleaner," Osborne said.

In addition, two companies are negotiating with IFAS for the rights to develop the "unusually effective" strain of the common fungus as a biological control for sweet potato whitefly, said Dr. James Tammen, IFAS director of technology transfer.

The whitefly is a bad bug. It appears to poison the plant, because the whole plant is affected, not just the spot where the whitefly is feeding. It whitens tomatoes worth half a billion to Florida, and silvers whole squash plants, fruit and all. Squash is worth about $60 million to the Florida economy.

"When you remove whiteflies, squash that were silvered by whitefly damage turn green again," Osborne said.

He said that two years ago, nurseries had no whitefly problem. Now they have to spray for them one to three times per week.

"We had an outbreak of the fungus a couple years ago on another insect that was not a pest," said Osborne. "It didn't seem worth pursuing at the time, but when a pathogen wipes out a widespread pest like sweet potato whitefly, you have to look into it."

A fungus that attacks fire ants and a microbe-sized worm that attacks mole crickets, also IFAS finds, are also being explored as potential commercial biocontrol products.

"The opportunity for commercial development of biocontrol is higher than ever before," said Tammen. "It's especially exciting because there's a whole new series of biotech companies specializing in niche markets."

Tammen said industry is especially interested in micropathogens such as fungi, viruses and bacteria to control plant diseases, weeds and insects.

Interest is great, Tammen said, because micropathogens can often be sprayed using existing pesticide equipment and often can be used in combination with other treatments including chemicals. Biologicals also promise a very high level of control, similar to chemical pesticides.

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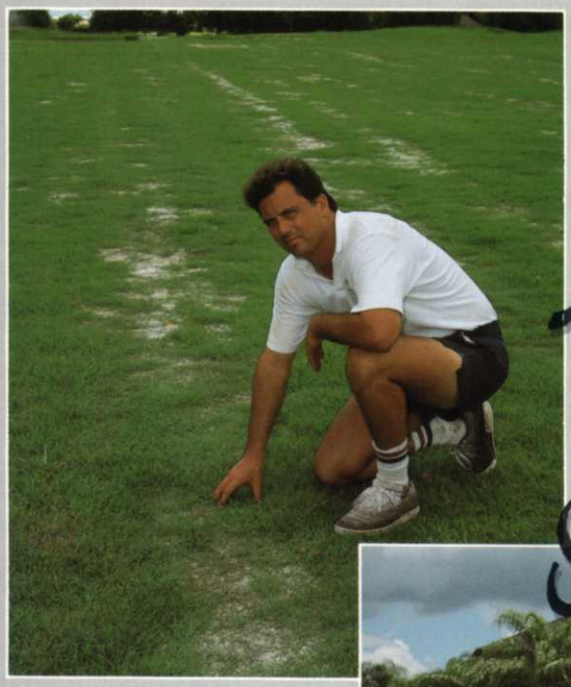

Brian Bowles, Construction Superintendent, Palm Beach Polo Club
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JB Branstrom, Golf Course Superintendent, Palm Beach Polo Club
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Trade Secrets

by Paul Voykin, Briarwood C.C., Deerfield, IL

A few years ago I installed a "Phone-Mate" recorder in my office for those members who live in Chicago (30 miles south of Deerfield) and who wish to know, very early in the morning during an inclement weather situation, the golf course condition, and cart status. It's been a huge success!

I have now become a bit more creative in my weather report to them in the wee hours of the morning. For instance, instead of the usual . . . "Hi, this is Paul (or P.V.). The course is closed because of three inches of rain", or whatever. I now say something like this: "Good morning, this is P.V. You have a fragile environment here with billions of living plants called grass, and I am charged by you with their protection and well-being. The ugliness of cart damage does not go well with our wildflowers, trees, and beautiful turf mowed at different heights. So, for today, the course is open but **no carts all day**. Please give me your support." Sometimes my message goes like this: Good morning, this is P.V., your Conrad from **'The Heart of Darkness'.** Every day it's the same . . . rain, more rain, and monsoons, and the jungle drums keep beating . . . 'Close the course, close the course', but not today. Everything goes; carts all over. Have a nice time." (Sad to say that afternoon I had to close the course again because it rained like everything.) Anyway, most of the members have been delighted by my P.R., but a small percentage, of course, are ready to shoot me.

CREDIT: The Bull Sheet