Tools of the Trade

Biorationals: A tide of the future in turfgrass care

COLUMBUS, Ohio — You may not find the “neem tree” in your dictionary. Nor the words “biorationals” and “naturalies.” But they will be playing increasingly important roles in golf course maintenance, according to Dr. Parwinder Grewal, an assistant professor of turfgrass entomology for the Ohio State University (OSU) Extension Service.

Speaking at the Ohio Turfgrass Foundation Conference here, Grewal said some biological controls have succeeded and some have not, but their use has increased tremendously in the last decade — a harbinger of the future.

Piecing together research from OSU, Cornell University and other colleges, Grewal updated the audience on research done on biologicals and biorationals. He defined biological control as the use of a living organism — such as beneficial nematodes, predatory mites and predators — to control pests on a golf course.

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Moss: Superintendents’ brainstorming pays off

COLUMBUS, Ohio — Research and subsequent answers to turfgrass problems are not always resolved by universities. A great example of networking information has occurred at the University of Guelph (USGA) agronomists and university scientists nationwide who got together to beat moss.

Chairing the database networking information was D. Frank Dobie, general manager and superintendent at The Sharon Golf Club here. Dobie worked with his staff and other superintendents to compile a complete list of moss problems.

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Earthworm fixes...

COLUMBUS, Ohio — Questions abound in the area of turfgrass soil ecology and biology, but Dr. Michael Boehm pointed to a future where biological care plays an equal role in maintenance with chemical and cultural care and the turfgrass’ genetic resistance.

The Ohio State University (OSU) assistant professor of turf plant pathology painted a picture in which current maintenance practices are dominated by chemicals, and where cultural practices and biological controls will account for 50% of the golf course maintenance.

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New biologicals...

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...Sunlight assessment

PROVIDENCE, R.I. — Sunlight assessment and digital imaging — two new technologies that are pulling golf superintendents into the computer age — will also help them deal with the difficult task of course renovations, according to a spokesman for the U.S. Golf Association Green Section.

“Frankly, most of the people here have the equipment and capabilities to operate this technology,” Dave Oatis, director of the Northeast Region, told the New England Section.

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Universities pioneering the way

Purdue pursues research

WEST LAFAYETTE, Ind. — With the help of course architect Pete Dye, multiple donors and a group of students who built it, Purdue University on June 27 will open a golf course that will produce a major five-year study on the effects of golf maintenance on ground and surface water.

Pointing out that environmentalists criticize past corporate-funded studies as biased, Dye said: “What Purdue produces should be the most unbiased report, simply because there is no reason to be biased. Good or bad, no one can argue the findings.”

All the money to build the new Kampen Golf Course and fund the research came from private sources, not golf associations or the chemical industry. “I was very much concerned that it not be company funds,” Dye said.

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K-State a new breed

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UCal Poly transforms trash

POMONA, Calif. — Dealing with society’s trash is an issue that draws little attention from the public until a landfill needs to be created or closed down. After operating a 20-acre landfill on campus property since 1957 in conjunction with the Los Angeles County Sanitation Districts, California State Polytechnic University here hopes to close the landfill and build an 18-hole golf course that will serve as a living laboratory.

The landfill has served two purposes over the last four decades. It has been a repository for the tons of refuse from the growing LA metropolis, and has served as an outdoor lab for waste management, environmental sciences, engineering and agriculture.

“The landfill has been very beneficial to the university from not only an economic standpoint, but also as an educational tool,” said Ed Barnes, executive director of the Land Lab and Asset Development for Cal Poly Pomona.

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By MARK LESLIE

Notable Quotables

• ‘I’d like to get my hands on a 200-acre farm and see what kind of a golf course I could build. Something tells me it would be a little unorthodox.’
  — Ed Michaud, superintendent at Sugarloaf Golf Course in Maine, who in the winter at Sugarloaf has built the No. 1 snowboarding resort park in North America, filled with “pipes,” “table tops” and “pyramids.”

• ‘It was scary from the standpoint that I didn’t think fire could travel that fast. You could not out-run it.’
  — Michael Fabricus, director of golf maintenance and construction for Matanuska and Palm Coast Resort in Daytona Beach

• ‘It sounds odd, but we would love a hurricane or tropical storm right now.’
  — Bruce Berger, superintendent at Quarry Golf Club in San Antonio, Texas, not long before Texas was hit by a series of storms.

• ‘Our single biggest spring problem is keeping the golfers off the course until the frost thaws out.’
  — Jerry Faubel, super at Saginaw (Mich.) CC

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Biorationals
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insect-pathogenic nematodes, bacteria or fungi — to control a pest insect.

Biorationals — a new word in golf course lexicon — are products of natural origin that are safe to non-target organisms.

The Environmental Protection Agency calls them pesticides with different modes of action than conventional pesticides, with higher selectivity and lower risks to humans and wildlife.

Researchers are delving into these fields in response to concerns about human health and safety, environmental and ground-water contamination, and the impact of chemicals on wildlife, fish and beneficial organisms.

Biorationals include botanicals, microbial elements and synthetic chemicals with alternative modes of action.

Grewal spelled out various findings of research into biologicals, including:

• Nematodes of the genera steinernema and heterorhabditis fight armyworms, webworms, black cutworms and white grubs that feed near the surface. They can become part of the environment if not exposed to toxins.

• Among plant derivatives, azadirachtin, from the neem tree, acts as a growth regulator and as a feeding deterrent to some insects.

• Of the phenyl pyrazoles, Fipronil is effective against mole crickets and fire ants. The product: Chipco Choice.

• The product Merit, from chloronicofinyls imidacloprid, is very effective as a broad-spectrum, long-residual insecticide.

• The halofenate Mach 2, a molt-accelerating compound, gives excellent control of white grubs, billbugs and beetles.

The synergism between the Cruiser nematode and Merit (used at 1/10th the recommended rate) provides 100-percent control of Japanese beetle grubs, Grewal said.

Grewal warned that fipronal had an adverse effect on the natural population of nematodes.

The OSU professor said more work needs to be done in a number of areas, especially on fungi and bacteria biologicals as well as to develop products to control white grubs.

"We need to try to understand the naturally occurring biocontrols that are already there and easy to establish... They save water, the environment, money and much more," Grewal said.

MAINTENANCE IN REVIEW

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