America, filled with "pipes," "table tops," and "pyramids." The winter at Sugarloaf has built the No. 1 poa annua with new drugs for killing cancer tumors. That's how storms.

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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 Club 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."

• "I would parallel it (control for poa annua) with new drugs for killing cancer tumors. That's how storms."

— David Major, superintendent Del Mar CC in Rancho Santa Fe, Calif.

• "It was scary from the standpoint that I didn't think fire could travel that fast. You could not outrun it."

— Michael Fabrizio, 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

Biorational: 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

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Earthworm fixes...

By DR. DANIEL A. POTTER

Earthworms have been called the "intestines of the earth" because of their importance in breaking down plant litter, recycling nutrients and enriching the topsoil. But on golf fairways, an abundance of earthworms can be too much of a good thing.

Generally, you'll have much healthier turfgrass where earthworms are abundant. Their burrowing reduces soil compaction and improves air and water infiltration. Earthworms enrich the soil with their fecal

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New biologicals...

By MARK LESLIE

COLUMBUS, Ohio — Questions abound in the arena 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 plant pathology painted a picture in which current maintenance practices are dominated by chemicals, and where cultural practices

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Universities pioneering the way

By MARK LESLIE

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. "We did this with Clemson University at the Ocean Course at Kiawah [in South Carolina], but Kiawah was a pristine piece of ground, so how

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K-State a new breed

By MARK LESLIE

MANHATTAN, Kan. — A new breed of college curriculum, one that opens management avenues to future golf course superintendents, will begin with construction of a prototype Tournament Players Club (TPC) university course at Kansas State University here.

Colbert Hills Golf Course, named for PGA Senior Tour player Jim Colbert, will be many things to many people.

"The positive impact of this project will be far-reaching," said Stephen Mona, chief executive officer of the Golf Course Superintendents Association of America (GCSAA), "a golf management program to train tomorrow's leaders, a research facility to aid the golf industry, and a first-class facility for golf enthusiasts..." It will provide "unique research and academic opportunities for K-

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UCal Poly transforms trash

By DOUG SAUNDERS

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 260-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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were we going to clean it up?

"Plus, a lot of the money for the monitoring [at Kiawah] came from the USGA, PGA, PGA Tour and chemical companies. That was a mistake."

Also, Purdue's study will be three years longer than Clemson's. And Dye feels it may extend beyond that since "all the heads of the different university schools are starting to get enthusiastic."

Another major advantage the Purdue study will have over Kiawah, Dye said, is that it is cleaning up water pouring onto the course from "all over Hell's half acre" — a four-lane highway, parking lots, housing, filling stations, etc. Piping was installed to catch the water and move it into three sets of wetlands to be filtered. From there, the water goes into a retaining pond which, when emptied, empties into an irrigation pond.

"We created 30 acres of marsh," Dye said. "We are improving the water that comes from the streets."

The Heritage Group of Indianapolis, a toxic-waste cleanup company, is donating its services and Purdue students and faculty are performing the water monitoring. Dr. Zac Reicher, who is overseeing the monitoring, said this and two tests could have major implications for future construction around the country.

Noting similar studies set up to measure runoff from a nearby WalMart parking lot and at a dairy farm, he said, "We think we will be able to use golf courses and created wetlands to handle runoff from subdivisions, commercial sites and agriculture."

Already, people involved from Purdue's entomology, botany, plant pathology, forestry, turfgrass, agronomy and building construction departments.

**Purdue**

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**K-State**

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State researchers and students," said Bob Krause, K-State's vice president for institutional advancement. "We have the opportunity to make something very special happen — something that will have a lasting impact on the world of golf and enhance the golf program at the university where I began my career," said Colbert, who donated $500,000 and raised millions from friends toward the $10 million facility.

"The university will use the course to train turf students how to manage, so that they can aspire upwards if they want," said Jeff Brauer of GolfScapes in Arlington, Texas, who is designing the 18-hole championship course, nine-hole teaching layout and driving range.

While faculty, Audubon International and others draft environmental study proposals, it is the education element that particularly sets Colbert Hills apart.

Krause was not only interested in a new golf course but in K-State being state-of-the-art in turfgrass and environmental research and extending golf into the Outward Bound program the school conducts for minorities in the summers.

"The opportunity sounds way too good to be true," said O'Brien, "because it ties together three of our objectives (the golf course management program, a chance to reach minorities and research) all in one wrapping with an affiliation with the PGA Tour and an outstanding university.

K-State's new major focuses on all aspects of running a golf course. Curriculum includes courses in turfgrass management, business management, hospitality and food-service operations.

**UCal Poly**

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At some point, landfills reach capacity and the next question is how to best close them down. Strict EPA guidelines specify the closure procedures for landfills. The university has decided that, in conjunction with closure and monitoring regulations, creating a course can provide economic and educational benefits into the future.

"Our desire," Barnes said, "is to build an 18-hole course that will generate income through greens fees, provide a recreational outlet for students, be of value to our athletic program, and give more opportunities for internships for our colleges of hotel and restaurant management, turfgrass management, landscape architecture, and biosciences."

The facility will encompass a 340-acre parcel that sits on a hill offering views of the valley and surrounding mountains. Two hundred acres are impacted by the landfill and the remaining acreage was severely affected by grazing and agricultural use. The original concept was to build a nine-hole course over the closed landfill. New plans are to blend 18 holes through the entire site, offering the opportunity to revegetate the property with natural plant materials and encourage the return of wildlife to the area. The landfill itself is due to close in July.

"The operation of a self-sustaining site such as this is a very positive approach to dealing with waste," Barnes said. "The methane that will be generated by the landfill, even after closure, will be collected and used in an even more efficient manner for the operation of the golf course and its facilities."

Students from the various schools at the university will be directly involved in construction, revegetation and operation of the course.