

SubAir System

Continued from page 81

making "significant developments."

Ferris explained the SubAir system features a blower — installed either in a vault below ground or on a portable trailer. The blower can distribute air into the root zone, or reverse the air flow to suck soil moisture — and with it some gasses — out of the soil.

"The main thing is, you need the gravel blanket [found in USGA green construction]," said Benson. "That blanket evenly distributes the air."

The portable SubAir unit, which is hooked into the green's main drainage pipe, is about \$8,000, Ferris said. The cost to install the permanent unit underground in a vault at construction is about \$16,000 to \$17,000 including labor, he said.

"It is so logical," said Hiers. "If a person uses it correctly, it will almost certainly reduce pesticide usage because you will make that soil less than friendly to fungus... You can take away excessive moisture, create the right temperature and get oxygen to the roots. That produces a plant with longer, deeper, healthier roots that is more resilient to disease, insects and traffic damage. You're going from a 90-pound weakling to a 180-pound linebacker."

"We also think we have good potential for controlling sodium," Benson said. "Being able to flush the greens out at our convenience, we should be able to monitor and hold down salt buildup, which is a big problem out West and in certain other parts of the country."

"The theory is absolutely correct," said Dr. Michael Hurdzan. A golf course architect who owns a PhD in environmental turfgrass physiology, Hurdzan was nevertheless reticent to support SubAir until it is proven in the field.

To that end, Ferris hired retired Pennsylvania State University Prof. Joseph Duich to study oxygenation, soil moisture removal, temperature control and root development with SubAir. It has been demonstrated on more than 40 greens around the country and was installed on two 17,000-square-foot greens at The Tennessee Golf Foundation's Little Course at Aspen Grove in Franklin, Tenn.

Joe Kennedy, superintendent at The Legends of Tennessee as well as The Little Course, which was seeded last September, reported good results so far, but added he will know a lot more later this year.

"Will it work? Time will tell," he said. "All indications are that it will. It definitely moves air. We have been able to create dew on a low-humidity day to get green. From that standpoint, we feel we may be able to do away with some surface fans."

Kennedy is mostly looking at air movement and temperature moderation. The Little Course's 17,000-square foot double green for the 4th and 8th holes, and its 17,000-square-foot putting course both have cooling systems — a four-foot deep network of pipe through which air is drawn.

"When the air came through the cooling grid, it — not the soil — dropped 30 degrees," Kennedy said. "We won't know until this summer what effect that will have on the soil. But that part is promising."

Meanwhile, it could also affect grasses, allowing superintendents to grow bentgrass further south, or Bermudagrass further north by controlling soil temperature. Benson added, "Guys with Bermudagrass who overseed because of

fear of five or six cold days in the winter, would have a way to dodge those five or six days, and they would no longer have to overseed."

Some had questioned whether SubAir would work as well on older USGA greens, which were built with more restricted macro and micro pores. But Benson said that, somewhat surprisingly, test greens have shown "age is not a factor."

"We fully expect a number of situations where the greens have significant problems where the soil is not acting as it should," Ferris said. "We've developed a tool with which we can go into the gravel blanket on any spot on the green and find out how good the [air] movement is. We will be able to find those areas, and that will allow the superintendent to focus on them and deal with them appropriately."

SubAir: New spin on an established practice

SubAir may be brilliant in its simplicity. But in theory, it is certainly not new. The agricultural industry has used the "treat-the-subsurface" theory since the 1920s. Dr. William Daniels, now retired from Purdue University, invented the fluid- and air-based Prescription Athletic Turf (PAT) System in 1972, and since then has seen it installed in 31 National Football League, college and high school fields. But a golf course application, based on moving air, not water, is new. And it could have profound implications for turf care.

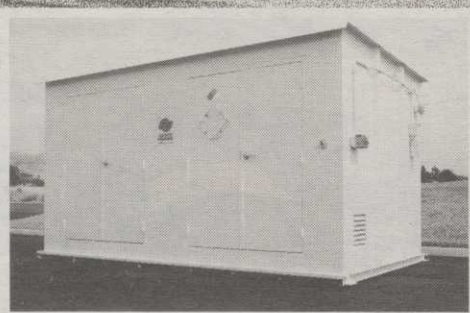
"Trying to get air into the roots and trying to keep grass growing under

adversity has always been a challenge, particularly when we sheer it down to the ground at 3/16-inch cut," Dr. Daniel said. "Where this ball game is going, I don't know."

Daniels reported that, with his PAT system, "a 1.5-horsepower pump on a vacuum blower can pull 100 cubic feet of air a minute out of a football field. Theoretically, in about 20 minutes you've changed the air completely."

Ferris estimates a complete air exchange in an average-size golf green in about 15 minutes with SubAir, using its 10-horsepower electric motor or 18-horsepower gas engine.

Keep your golf course chemical liability to a minimum...



Safety Storage, Inc. prefabricated, relocatable buildings provide a low-cost solution to safe storage, containment, mixing, and dispensing of golf course chemicals and hazardous materials.

Safeguard personnel, avoid the liability arising from soil and groundwater contamination, meet fire safety needs, and achieve full compliance with federal, state, and local regulations.

Building sizes range from 5' to 32' in length with capacities up to 320 sq. ft. Standard features include continuously-welded, heavy-gauge steel construction, secondary containment sump, removeable fiberglass floor grating, and chemical resistant coating inside and out. Select from a full range of options

For complete details, call us toll free at: 1-800-344-6539 Visit Our Booth #'s 2011-2013 at GCSAA 66th Conference & Show

...professional hazardous materials storage solutions



SAFETY STORAGE™

SAFETY STORAGE, INC.
2301 Bert Drive
Hollister, CA 95023
1-800-344-6539
Phone: 408-637-5955
Fax: 408-637-7405

CIRCLE #174/BOOTH #2011-2013

Tools Of The Trade...

If you're involved in the golf industry, or planning to be, you'll need NGF's *Tools Of The Trade* for your business planning, forecasting, marketing or project development. The **National Golf Foundation** can answer your needs with just a simple phone call.

The **NGF Comprehensive Information Catalog** contains more than 200 information resources covering virtually every segment of the golf industry ... **Market Reports... Directories... Golf Course Development... Facility Operations and Maintenance... Rules and Etiquette... Player Development... Executive Summaries and much more.**

To request your **FREE NGF INFORMATION CATALOG**, Call toll-free: **1-800-733-6006** You may order publications by phone or fax using VISA, Mastercard or American Express.

