

BRIEFS



ENVIROTECH HIRES CROWE

ENID, Okla. — Envirotech Services, an engineering consulting firm, has hired M. Kevin Crowe as its representative in the Eastern United States. He will be handling the firm's golf course consulting in that area, helping golf courses come into compliance with environmental and safety and health regulations. Crowe, a resident of Augusta, Ga., was formerly the course superintendent at Bonita Bay Club East in Naples, Fla., as well as assistant superintendent in training at Augusta National Golf Club. He earned an associate degree in environmental horticulture from Abraham Baldwin Agricultural College. Crowe is a member of the Georgia and Everglades golf course superintendents associations.



M. Kevin Crowe

IOWANS ELECT APPEL PRESIDENT

DES MOINES, Iowa — Russ Appel of Briggs Woods Golf Course in Webster City has been elected president of the Iowa Golf Course Superintendents Association. He and a new slate of officers were elected at the 66th annual Iowa Turfgrass Conference and Trade Show held here, Jan. 24-26. Joining Appel are Vice President Troy Martinson of Sioux City Country Club; Northwest Director Stephen Roseberry of Sibley (Iowa) G&CC; Central Director Don Portwine of Ames (Iowa) Golf and Country Club; and Northeast Director David Roe of Garner Memorial G.C. in Cedar Rapids. Serving in the second year of a two-year term are Southwest Director Ron Stephan in Indianola; Director of Association Affairs John Ausen of Hyperion Field Club in Johnston; and Southeast Director Joyce Hamilton of Wahkonsa Country Club in Durant.

EQUIPMENT, ENGINE COUNCIL MEETS

CLEVELAND — The Equipment & Engine Training Council will hold its 4th annual meeting in Cleveland on April 9-11. The meeting's purpose is to address the critical shortage of technicians in the outdoor power equipment industry. For more information contact the EETC at 512-448-1788.

WEB SITE GOES ON-LINE

GREENTRAC.COM, a web site pertaining to turf installation and management, has debuted.

Seven Lines of Defense

Canadian project uses set of conservation techniques

By CHERYL REGO

ONTARIO, Canada — Environmental concerns ride high at the site of any golf course development, and now a developer here is using what it calls the Seven Lines of Defense to combat environmental concerns. The Seven Lines of Defense are conservation techniques that address concerns such as water runoff, loss of nutrients and leaching of pesticides.

Some of the techniques featured in the Seven Lines of Defense have been already been incorporated into new golf courses, and many of the techniques are leading the industry. Two of them are particularly interesting.

- By lining the greens, tees and inlets to wetlands with klinker ash stone, a hydro-generation waste product, the developer hopes to remove additional phosphorous runoff.

- It also plans to plant a harvested species such as poplar trees in the constructed wetlands which will remove unwanted components by bio uptake.

The notion of using klinker ash on the course has an interesting start. Klinker ash is a byproduct from the coal-fired generating stations of Ontario Hydro. Hydro was looking for a way to get rid of the klinker ash, and with some research



Vito Cirone, one of Burnsides employees, is planting in the field.

found that it could be used as bulk fill and that it attenuates and binds phosphorus.

Phosphorus is a major concern for the Lake Rosseau Beach Resort. The resort is located in the Muskoka Lakes region of the province, a watershed area of great environmental interest. Phosphorus encourages algae blooms in lakes. The idea to incorporate klinker ash stone came from Michael Michalski, a biology consultant who had done research on the ash. Experiments are now being done to determine the life span of klinker ash's phosphorus-ab-

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Niche and native grasses may be an answer for some

By PETER BLAIS

ROCKPORT, Maine — In the near term, superintendents cannot live without pesticides, fertilizers, irrigation, etc., according to Skip Lynch, director of Seed Research of Oregon's Golf & Sports Turf Division.

But in the long term, by going to low-maintenance/high-resistance niche and native grasses, superintendents can drastically reduce their use of these inputs.

"It's been working in England for 400 years," Lynch told those attending the recent Maine Golf Course Superintendents Association annual conference here. "They don't irrigate, fertilize or spray pesticides. Because of that, they have grasses that have adapted to those management extremes."

Why change?

Today's demands on courses are growing, Lynch said. Input costs — i.e. fertilizers, irrigation and pesticides — are going higher and higher. Demands for late- and early-season play as well as Augusta National-like conditions are escalating. And despite the "Brown Is Beautiful" campaign designed to lower golfer expectations, golfer demands mean living turf is being pushed to its limits.

More challenges loom on the hori-

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The future is now in maintenance building complexes

By MARK LESLIE

HARROGATE, England — Maintenance "barns" of the past are shedding that identity as modern technology, forward-thinking space planning and environmentally conscious superintendents transform their work areas into "turf-care centers," or "natural resource management centers."

That was the word from Master Greenkeeper Terry Buchen, an American who told an audience at BIGGA Turf Management Exhibition (BTME) about "Maintenance Facilities of the Future."

Indeed, parts of these facilities of the future already exist at some high-end private and public facilities in the United States. The highly traveled Buchen took bits and pieces of a number of maintenance complexes to present a composite from which greenkeepers could draw and to which they could aspire.

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British & Int'l Show Review



OF PRESIDENTS PAST AND PRESENT

New British & International Golf Greenkeepers Association Chairman Elliott Small of Tulliallan in Scotland, center, visits with Golf Course Superintendents Association of America President Dave Fearis, left, and GCSAA past President George Renault III.

Watschke: Expect breakthroughs in turf

By MARK LESLIE

HARROGATE, England — Fantastic advances in turfgrass breeding and genetics loom in the immediate future, but with this progress will come unheard-of challenges for greenkeepers, said Dr. Thomas Watschke of Pennsylvania State University.

"Innovations are only limited by the imagination, and believe me when I say that geneticists know how to dream," Watschke said in a talk at the BIGGA Turf Management Exhi-

bition (BTME) here.

"Technology offers very seductive solutions. But what are the ramifications of the results?"

He was referring to one of the latest of a phenomenal string of new high-tech grasses that have included one Round-up resistant bentgrass and another possible Prograss-resistant bent.

Dr. David Huff, Watschke said, has produced a semidwarf-type annual bluegrass that is superb but without seed

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Future is now in maintenance complexes

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The parameters for Buchen's modern and futuristic turf-care center for an 18-hole course include:

- "While maintenance buildings in the past were situated in the middle of the golf course, the modern way of thinking is to have them on the outside so that deliveries don't bother golfers," he said
- The area normally needed is .81 to 1 hectare.
- The buildings range in size from 372 to 1,116 square meters.
- "The goals and objectives are to store all the maintenance equipment inside to prevent damage from the sun and moisture, and have a good environment to work on the equipment and for the employees."
- Cool-season courses will have heated and cold storage. Warm-season courses also will have heated storage, but many times they have a three-sided carport for cold storage.

The conceptual floor plan provides for proper traffic flow — a crucial decision for the greenkeeper to decide.

The mechanic's shop of the future will range in size from 100 to 280 square meters. Its amenities will include:

- ✓ A hydraulic lift for riding equipment that can lift from 2,000 to 4,000 kilograms; a hydraulic lift table for smaller equipment and walk-behind mowers which is capable of lifting about 900 kilos; workbenches that are 91 to 106 centimeters high and are topped with 6.3-mil-thick metal and which have storage space underneath.
- ✓ Numerous air and electrical outlets for electric and air power tools.
- ✓ Overhead, retractable hoses for lubrication, air and water.
- ✓ An overhead hoist and block and tackle.
- ✓ Remote control-operated garage doors that are at least 4 meters high and 4 meters wide.
- ✓ Skylights and excellent fluorescent lighting.
- ✓ A parts room with adequate shelving and excellent lighting.
- ✓ A heated and air-conditioned mechanic's office with a window into the shop area and sealed off so the mechanic can make phone calls in a quiet environment.
- ✓ Record-keeping, including a computer to keep service records, parts inventories, purchase orders, etc.; file cabinets for record keeping; and bookcase storage for service, shop and parts manuals for machinery.
- ✓ A grinding and sharpening area, sometimes in a separate room, that contains bedknife and reel grinders.
- ✓ An exhaust fan and fresh-air ventilation and a dust-collector system.
- ✓ A welding and acetylene torch area that contains safety curtains to protect the eyes of nearby workers; welding table with vise and storage underneath; three-phase electric outlets throughout; Y extension cords so welders can be mobile; exhaust fan and fresh-air ventilation; and excellent lighting.
- ✓ A heated- and cold-storage area for maintenance equipment, with a garage door at least 3 meters wide and 3.7 meters high.

"This is really important in new facilities," Buchen said. "There is more and more electric equipment today, and a lot more to come, so having separate outlets with separate circuit breakers is crucial."

- ✓ Miscellaneous storage rooms for tools, paint, course accessories, grass seed, and irrigation and drainage parts.
- ✓ A spray-paint booth.

Employee areas, Buchen said, will boast showers, locker rooms, kitchen, vending machines, lunch room and meeting room. The lunch room may have two to three microwave ovens, a stove and oven, toaster oven, a refrigerator or two, kitchen sink, electric drinking fountain, the crew assignment board, a large hand-washing sink, a television for audio-visual training, along with a VCR and DVD players. A pay telephone, time clock, bulletin board, rainsuit storage area and even a washer and dryer will be a standard.

Safety requirements include Right To Know wall displays with material safety data sheets; hazardous communication plan wall display; a walkout-tagout program; local, state and federal work posters; emergency telephone numbers; safety training video notebooks; and an emergency evacuation plan.

Future first aid kits will include a defibrillator, oxygen bottles, eyeglass goggles, ear plugs and safety goggles.

In the States, Spanish is becoming the unofficial second language on golf course maintenance crews, and so all safety signs are becoming bilingual, Buchen said.

New maintenance facilities of the future, Buchen said, will have:

- Soil test and disease identification rooms.
- A microscope and soil test kit.
- An irrigation technician's office with a computer irrigation controller, and irrigation system computer parts and supply inventory.
- The head greenkeeper's office with a weather computer, grounds management operating system computer, Internet access, three-quarter-sized toilet and shower, and a conference table for meeting with key staff members.
- The assistant greenkeeper's office with a blueprint room, daily operation record-keeping, and all the fertilizer and pesticide records. Sometimes it will be shared by the spray technician.
- A reception area fully equipped with a computer, fax machine, photocopier, telephone voice mail, paper shredder and two-way radio.
- Storage, utility and equipment closets.
- Utilities including single- or three-phase electricity, natural gas or propane for hot-water heat and furnace, domestic water, sewer, three to six telephone lines and cable television for the Weather Channel.
- An employee car park typically with one car parking space (3 meters wide and 6.1 meters long) for each employee.
- An equipment staging area outside the maintenance building, where mechanics can check out the equipment and the employees can jump right on it to go to work in the morning.
- A trash dumpster area.
- A loading dock for lorries to unload



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Terry Buchen photo



This hydraulic lift has a lifting capacity of between 4,400 and 8,800 kilograms, so it can lift all maintenance equipment except the heaviest loader/backhoe tractors.

The future is now

Continued from previous page supplies.

- A 140- to 232-square-meter pesticide and fertilizer storage and rinsate building that sometimes stands alone. It is equipped with spill containment, a 24-hour-a-day exhaust fan, fresh-air vents and explosion-proof lights. It is heated and cooled and has a fire sprinkler system because of the volatility of the pesticides.

- Fire extinguishers, emergency spill management and bilingual safety signs.

- An area next to the pesticide buildings to store spray and granular application equipment.

- Three storage tanks for rinsate to wash the pesticide and fertilizer application equipment. The tanks will range in size from 380 to 760 liters. Drainage grates and submersible pumps will ensure that all the water is reused and filtered by filters that are changed daily.

- A 93- to 232-square-meter fertilizer storage building.

- Used oil storage and rinsate equipment wash racks. Unleaded petrol and diesel fuel storage tanks, ranging in size from 1,892 to 3,785 liters, will have such safety requirements as emergency fuel

shutoff switches, fire extinguishers and bilingual safety signs.

- New oil storage, in either 113- or 208-liter drums, with spill containment beneath them.

- Soil storage buildings made of brick, with sidewalls, and a roof. The floor surfaces will drain toward the front of the building, so that if any moisture does get in, it surface drains. Storage will include greens top dressing, top soil, tee and fairway top dressing soil, bunker sand, divot soil mix, mulch and bark, drainage gravel, and, in the Northern climates, road salt and calcium chloride.

- Greenhouses for in-house propagating of annual and perennial flowers, trees and shrubs, clubhouse interior plants, and turfgrass experiment plugs. Turfgrass nurseries, often at the maintenance complex, will vary in size from 140 to 465 square meters. The tee, fairway and rough nursery, often located on the golf course, will range from 465 square meters to almost half a hectare.

"Many new facilities," Buchen added, "have turf student housing — literally small apartments that are furnished and have no cost for the employee. It actually helps the club by providing security through the employee." ▽



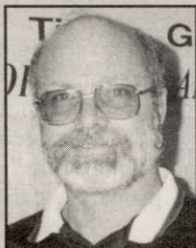
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— Gary Femrite, Golf Superintendent, Pebble Creek G.C., Becker, MN



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Lebanon
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Grasses to break barriers

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heads. To produce those seed heads the next step is genetic manipulation that will allow that particular cultivar to produce seed at a commercial level without giving up the other traits that are invaluable.

"We need a terminator gene," Watschke said of the process. "What will be required go turn on and turn off genetically engineered response? That will be the challenge... We don't want to end up with something we do not know how to manage."

Therein lies the question of ramifications of at least some of the up-and-coming turfgrasses, but others of these new breed will turn heads in a good way, he said. For instance, the bentgrass that is resistant to Roundup and the one resistant to the annual bluegrass control Prograss. And the genetically engineered rooting ability, which will be on-line by the middle of this century, "will be phenomenal," Watschke added.

Turfgrass breeders and geneticists are making progress in various arenas — from compaction resistance to wear and shade tolerance, non-thatch producers, and dwarfism, he said. Perhaps none of these, however, is as fascinating as "allelopathy," the capacity of one plant to suppress the growth of another. Most of the time this is due to roots, but sometimes from the trailers that come out of the leaves.

"This offers tremendous potential to the whole arena of herbicides, or better still, manipulation of plant competition between one grass and another," Watschke said.

"We have clear evidence that there are certain perennial ryegrasses that suppress annual bluegrass growth. It has long been known that quack grass suppresses the growth of all other grasses," he said.

"Geneticists should go after this one with gusto."

Watschke spelled out the progress in other areas:

- **Compaction resistance.** "We spend a lot of time managing turf to resist compaction," he said. "We have wonderful tools and equipment to deal with it. Yet every time we want to do something about compaction it gets in the way of people using the facility. There are a couple of plants — knot weed and goosegrass — that have extraordinary capacity to tolerate compaction. They can maintain respiration of the roots under a very low oxygen diffusion rate."

Physicists have known for a long time that these plants have that capacity, he said, but nobody knows why.

"How transferable is that trait?" he asked, adding, "Scientists are looking at the question, can we put these qualities into other grasses?"

- **Shade tolerance.** "We tend to line up fine fescues and others as shade-tolerant grasses. We want to get grasses to do more than they can do," he said.

For instance, Watschke said, "poa trivialis has extraordinary shade tolerance. How tough is it to transfer that to poa protensis? Then you would have shade-tolerant bluegrass, and we don't have to worry about areas where we have shade on the surrounds or in the rough..."

"I personally don't think it will be that big a trick to impart shade tolerance to grasses that don't have it."

- **Wear tolerance.** Vast differences in wear tolerance are sometimes observed within a genus. The same scientific method of transference should work with grasses as well, Watschke said.

- **Dwarfism.** Huff's research has pinpointed some plants of annual bluegrass that grow less than half an inch in three months. "What does that mean in regards to wear tolerance? What

does that mean for improvement potential?" Watschke asked. "We will be looking at a turf that is marvelously dense, fine-textured, produces almost felt at the surface — like a billiard table. But, if it doesn't wear well, what have we got?"

"Although dwarfism and fineness and density have appeal, we have to be concerned with the downside at the same time."

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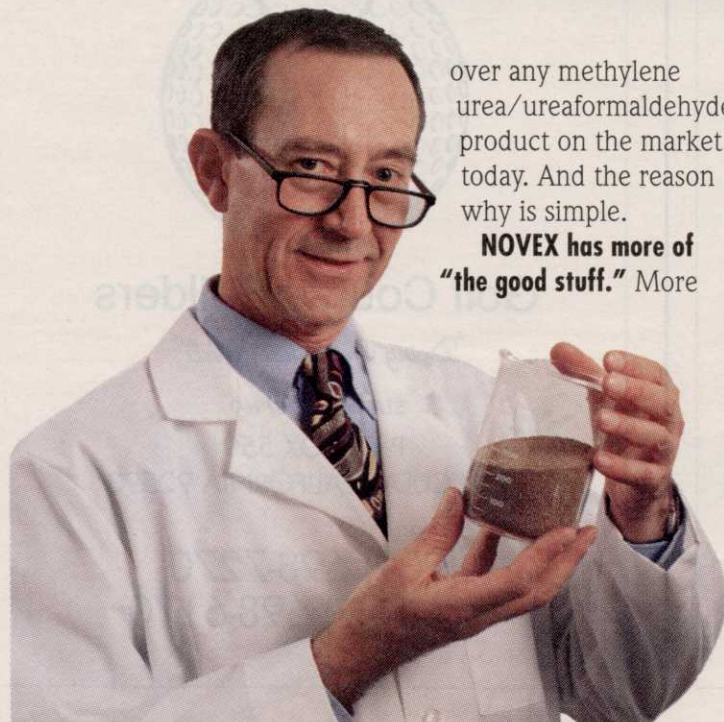
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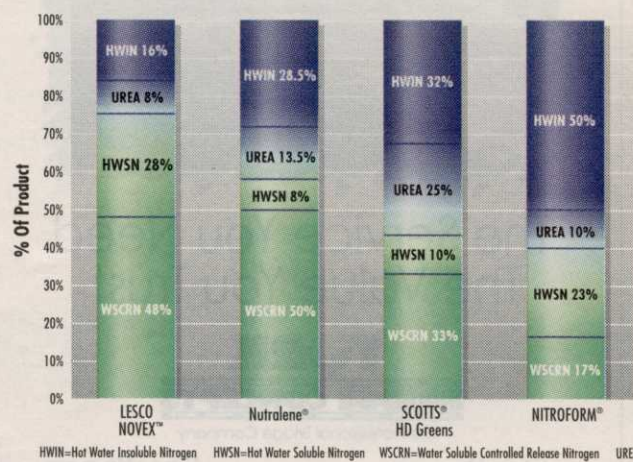
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over any methylene urea/ureaformaldehyde product on the market today. And the reason why is simple.

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Nitrogen Characteristics



Mike Harrison: Desert superintendent

Continued from page 37

the valley, across the moderating influence of Lake Osoyoos and into the territory to the east. Lacking this topography, it can be relatively balmy at the course while in Omak, Wash., a mere 50 miles south, a major snowstorm might be in progress.

The area's popularity has resulted in acres of condominiums

and private homes south of the course, and a building boom in the area of the town.

In addition to the water-purification chemicals, the residents use water softeners, Harrison said. These use salt which add yet more sodium to the mix.

Ruefully Harrison noted: "There are better products out there [for water softening] but they're more

costly by four times."

Pointing to a browning pine, he added, "We had a dead pine analyzed and there were 67 parts per million sodium in its tissue. That's 15 times normal."

But Harrison is not discouraged.

"This is a great place to grow grass," he said. "Over the last two years we only had five or six days of snow, and it wasn't cold."

Beside growing grass, the

crew cuts cups and moves the tee markers daily. Bunkers are power-raked five times a week. Although the greens are cut daily, Harrison has the cleanup cut done only three times a week, explaining that the compression of the triplex mowers around the curves exacerbates the effects of the sodium in weakening the turf.

HORSE TRIALS

One day annually, in May, the South Okanagan Horse Trials

come to Osoyoos G&CC. There is a course of jumps (permanently placed) and other objects, very large objects, that are used on land equestrians share with the course. On this day, the configuration reverts to the original 18 holes, a process that takes six hours to set up and another six to reconfigure.

"Actually," Harrison grinned, "it isn't bad as it sounds. In fact, I enjoy it."

POSSIBLE 36 HOLES

Addition of another nine holes is being considered at Osoyoos G&CC.

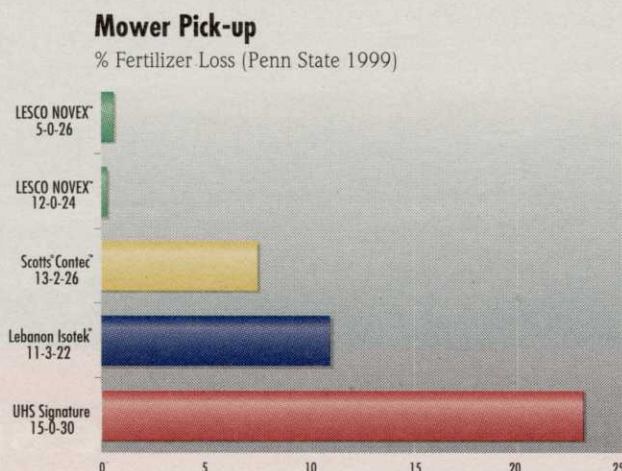
"There are more people moving into the area, more people coming from The States to play here," Harrison said, perhaps lured by the fact the Canadian dollar in October was worth \$1.47 U.S. There are 200 privately owned and 50 rental golf cars at the course.

Will Harrison be up to the challenge of yet another nine holes?

"Oh yes," he said enthusiastically. "Each problem is a challenge, and really, there aren't too many major problems that crop up. The membership is great. I get very little pressure. I love living here and so do my wife and children." ▶

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Future grasses

Continued from previous page

• Non-thatch producers. This, Watschke said, is a problem.

"Some of our best grasses are thatch producers," he said. "In this part of the world you have a lot of fine fescues that are thatch producers. They have seasons in which they grow for 12 months, and yet for another period of growth there are such cold soil temperatures that you have very low background-level microbial activity. Even though you have a pH that is adjusted and a top-dressing program, you still get this accumulating thatch just because of their growing environment, coupled with lack of microbial decomposition.

Meanwhile, scientists are trying to breed cold tolerance into warm-season turfs and heat-tolerance into cool-season grasses.

"Under those circumstances the challenges will be far greater than a lot of the other things I've mentioned," Watschke said. "This gets tricky, when you take metabolic issues that have complexity of genetic control. To unravel all of that and make it work is difficult.

"However, the Japanese have had early success in transferring such traits from Zoysiagrass to cool-season germplasm."

Turfgrass management, he said, "will only get worse in terms of how complex the issues are that you are going to have to deal with. Genetic engineering is not going away." ▶