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 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 hydro station. Flanders watershed was looking for a way to get rid of the klinker ash, and with some research

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 horizon.

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 Ferretti, left, and GC&AA past President George Renoult 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.

“Technologies offer 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 Progress-resistant bent.

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

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Watschke said of the process.

...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 with-
out 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 enge-
neered 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 root-
ing ability, which will be on-line
by the middle of this century,
"will be phenomenal," Watschke
added.

Turfgrass breeders and gen-
eticists are making progress in
various arenas — from compac-
tion 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, manipula-
tion 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 extraor-
dinary capacity to tolerate com-
paction. They can maintain res-
piration 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 no-
body knows why.

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

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

• Wear tolerance. Vast differ-
ences 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 re-
gards to wear tolerance? What
does that mean for improvement
potential?" Watschke asked. "We
will be looking at a turf that is
marvelously dense, fine-text-
tured, produces almost felt at
the surface — like a billiard table.
But, if it doesn't wear well, what
have we got?"

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

Continued on next page

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fertilizer is more completely used.
Mike Harrison: Desert superintendent

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the valley, across the moderating influence of Lake Osoyoos and into the territory to the east. Lack ing 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 adds 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 as 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.”

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 to reconfigure. Such traits from Zoysiagrass to cool-season grasses.

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.”  

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