ROBOTICS, GPS TECHNOLOGIES PROMISE TO TRANSFORM MOWERS

By Joel Joyner

BLOOMINGTON, Minn. — Lawn mowers have undergone only minor changes in the past several decades, but a burst of technologies promise to usher in a new world of machines. We’re talking about “autonomous” mowers - riddenless and controlled by computers. And then there are battery-powered, laser and hybrid mowers. Are they destined to be all the rage?

Let’s begin with the robots, where the experts are optimistic.

“It wouldn’t surprise me at all to see some type of robotic mowers on a golf course within the next five years,” said Dana Lonn, director of R&D here at the Toro Co. “It will be like something out of the Jetsons, where you press a button and a fleet of mowers automatically go out and mow your golf course? I’m not sure I’d bet on that.”

According to Lonn, newly engineered technologies will unfold over the next three years to solve the major problems.

“There’s the collision-avoidance factor, for one,” he said. “You have to be 100 percent sure you’re not going to hurt somebody. We’re also looking at digital imagery, putting enough smarts on the mowers that you process the picture for the mower to read.

The opposite approach is looking at a ‘proper scene,’ where there’s a relatively flat, green scene in front of the mower,” Lonn said. “If the mower encounters an obstacle it’s not programmed to accept, it will have to know to avoid it.”

The advantages of digital imaging don’t end there. Robotics mowers also could look for potential disease outbreaks while mowing.

“The University of Arkansas is running studies using digital imagery to quantify turf disease,” Lonn said. “They can scan an image looking for changes in color and for patterns of color. They may be able to detect conditions in the turf that are not yet visible to the naked eye. I can envision a digital video camera being installed on a maintenance machine.”

ELECTRICAL MOWERS

Wouldn’t it be nice to have a mower that never leaked oil, never made noise, and never created exhaust fumes?

It’s already here. Electrical mowers are available today for mowing greens, but they have yet to become commonplace.

“New trends have more to do with environmental issues more than anything else,” said Peter Whurr, vice president of production at Textron. “The idea of being friendly to the environment is really being pushed hard in our industry. We’re the only one that currently has a tri-plex greensmower that’s battery-powered.”

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TECHNOLOGY

MANAGEMENT

“Super-bent’ thatch control made easy

By Kevin Ross

In 1995, when Penn State University released the A and G series bentgrasses, questions were immediately raised regarding the thatching potential of these varieties. Their high shoot density and growth rate characteristics were thought to translate into intense thatch development.

Now, after five years of use on golf courses around the world, we are learning how to manage thatch on these bentgrasses.

Thatch is a layer of dead and dying tissue that accumulates when the growth rate exceeds the rate of decomposition. This tells us that controlling the growth of these new bentgrasses with astute fertilizer management might be the first step in the thatch-control equation.

Many superintendents growing these bent grasses have commented that the fertilizer recommendations were much higher than originally anticipated. I know one superintendent who, with a 12-month growing season, is using only two pounds of N/M per year on Penn A-4.

Another superintendent feels that A-4 has the ability to metabolize fertilizer at a much higher efficiency rate than older bentgrasses, although there has been no research to support this statement. However, this supposition is starting to hold true in the opinion of superintendents who are managing these bentgrasses.

This knowledge of fertilizer needs has led some to believe that thatch is much less of a problem than originally thought, although its accumulation is still a point of debate.

EQUIPMENT SOLUTIONS

Regardless of the debate, equipment companies have addressed this issue with new machines targeted toward thatch management.

The piece that is receiving the most attention is the Graden verticutter/dethatcher from Australia. This is the first machine on the market that has proven to be a true dethatcher for golf greens management.

Some superintendents feel so strongly about this machine’s ability to remove thatch that they are saying it may even take the place of one of their scheduled aerifications. The percentage of thatch removal from the green surface area is much greater than with conventional core aeration. Using this machine in one direction with 0.125-inch blades on 1-inch spacings will remove approximately 12 or 13 percent of the green surface area.

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GOLF COURSE NEWS

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Willow Run Golf Club here has become a very old design," Kienast said. "It has the potential to the program and the environment," he said. Pat Wegmann and the course horticulture director, certified member of the Audubon Cooperative Sanctuary Program (ACSP). The low-budget facility required a team approach in accomplishing the certification.

"I have to share credit with my assistant Pat Wegmann and the course horticulturist Jason Dibb as well as the rest of my staff for their hard work and dedication to the program and the environment," said superintendent Jerry Kienast. "This definitely has been a team effort.

At Willow Run, which opened in 1975, the program worked to provide a more challenging layout for the players. "It's a very old design," Kienast said. "It has the push-up greens, not well-defined and very wide open. Adding prairie grasses and leaving watered areas alone rather than stripping them down made a significant difference.

"Instead of having a fairway dogleg where you could miss it by 50 yards, 60 yards or 70 yards and still have a play from the short rough, now you end up in a two-foot high prairie grass," he said. "On the 10th hole, you could spank it anywhere and not have a difficult play at the green. Now, if you miss the fairway by even 10 yards, you're lucky to even find the ball."

The changes have been successful for both the environment and attracting a better grade of players.

"We use to be listed with Golf Digest as a two-star golf course, and shortly after completing the certification program we were listed as a three-star course. We've become a more challenging course primarily from defining our holes," said Kienast.

The 6,400-yard course signed on with the program back in 1997.

"To reach certification, a course must demonstrate that they are maintaining a high degree of environmental quality in a number of areas," said Joellen Zeh, staff ecologist for the Cooperative Sanctuary Program.

"The superintendent, the maintenance crew, the manager and turf division at John Deere, says global positioning systems, guided by satellites, will drive some dramatic advances in mowers.

"In five to 10 years, we'll see autonomous mowing with GPS," he said. "We'll see, most likely, self-adjusting cutting units with GPS. Within five years, we'll see onboard GPS diagnostics."

What's the advantage for superintendents? "The superintendent, the mechanic or even the distributor who sells the unit will be able to tap in and receive a signal that says, 'Okay, what's the average oil pressure that this engine has been running in the last 24 hours?" said Grief.

"We'll be able to use GPS to take readings that will extend the life of the product. GPS and its spinoff benefits will take course maintenance to a new level of efficiency," Grief said. "I can envision, at some point in time, there being a little white shed next to a putting green. At nine o'clock at night a door will open up and a walk-behind mower, as we know them today, will go out and mow the greens so that a superintendent doesn't have to mow them first thing in the morning."

"Prior to that, however," Grief said, "as a manufacturer, we'll use GPS to help an operator mow a straight line. Essentially, an operator will be running the machine but not steering it."

As costs come down, the technology will become widespread, he predicted.

"One of the obstacles is to get the golf course maintenance side to accept or invest in GPS," Grief said. "There needs to be a fair and reasonable price that's acceptable to the marketplace."

Kevin J. Ross, CGCS, is director of golf course maintenance at the Country Club of the Rockies, in Edwards, Colo.