LawnNibbler acquires taste for golf course turf

_By Fred Wright_  
GAINESVILLE, Fla.—A robot lawn mower called LawnNibbler, created at the University of Florida, may soon be pruning the tees and greens of the neighborhood golf course.

Designed by the university's Machine Intelligence Laboratory, the prototype can cut grass intelligently — avoiding dogs, kids, trees and golfers. It uses a radio wire buried at the perimeter of its work area and a navigation beacon system using sonar and infrared emitters and detectors that tell it where it is in its environment.

The LawnNibbler has four wheels, a chain drive, electric motor and lead acid battery and it works on the principles of a tank: It can turn on a dime — or a divot.

"We've done no engineering to date in terms of endurance," explains Keith Doty, director of the lab who designed the original model two years ago, but he estimates the LawnNibbler can run several hours before needing a recharge.

A graduate student, Kevin Hakala, added sensors and a guidance system last year.

The buried wire acts as an obstacle that the LawnNibbler cannot cross. Just 24 inches high, the LawnNibbler is just under 24 inches long and just over 12 inches wide. It weighs 35 pounds.

"The microprocessor control allows it to spin on itself, left, right, back, forward," Doty said.

The navigation system uses a trilaterization process, like a Global Position System (GPS) using a satellite, from three poles placed to define the LawnNibbler's territory.

"The game plan is to have a robot dog house — the LawnNibbler would go to the

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AgriBioTech to take Zajac, affiliates

_LAS VEGAS —_ Dr. Johnny Thomas, chief executive officer of AgriBioTech, has announced that the company has signed four separate letters of intent to purchase Zajac Performance Seeds Inc. and its Oregon affiliate (Zajac), Ohio Seed Co. (Ohio Seed), Van Dyke Seed Co. Inc. (Van Dyke) and Las Vegas Fertilizer Co. Inc. (LVF).

The four companies have combined annual revenues of approximately $46 million.

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NEW PRODUCT OF THE MONTH

ANAHEIM, Calif. — The Taylor-Dunn Manufacturing Co. has entered the outdoor market with the Roadmaster, a new gasoline-powered vehicle. Designated the model R6-80, the Roadmaster is made of 16-gauge Diamond Plate Steel and can carry as much as 1,000 pounds over rough, uneven surfaces. The Roadmaster was designed for situations requiring around-the-clock operation, precluding the use of electric-powered vehicles that need recharging several hours a day. Powered by a quiet, nine-horsepower engine, the Roadmaster has a range of up to 100 miles. The engine meets the strict, low-emission standards of the California Air Resources Board. For more information, contact Taylor-Dunn at 310-293-0622.
LawnNibbler

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dog house and recharge itself whenever it needed to," explains Doty.

The prototype has been tested in conditions ideal for golf course care — wet grass up to six inches high, on a 12-degree slope, even over tree roots. No problems. The LawnNibbler uses a weed trimmer-like nylon cord to cut a six-inch swath with, not a blade.

With its electric battery, the LawnNibbler runs along at 1 foot per second.

Another goal Doty has for his creation is an ability for it to learn and become smarter in its ability to do its mechanical duty — possibly becoming able to mow an entire golf course without human supervision. "The sky's the limit once you have a computer on board and enough memory," Doty said. "These things will only get better and better."

Doty said the original concept was to have the LawnNibbler simply spit the cut grass back onto the lawn. "Future models could bag it up, but that creates a lot of difficulties — when is the bag full? How to empty it? That could double the cost of the mower."

Doty projects that the initial cost of producing working models of LawnNibbler would place the price at about $2,000 per unit. "Once it catches on...a bare-bones model might cost $1,500. The enhancements I have in mind could maybe build that up to $2,000 to $3,000."

The market originally conceived for the LawnNibbler was as a machine to prune the grass around Florida's orange groves. "Another goal Doty has for his creation is an ability for it to learn and become smarter in its ability to do its mechanical duty — possibly becoming able to mow an entire golf course without human supervision. "The sky's the limit once you have a computer on board and enough memory," Doty said. "These things will only get better and better."

Doty suggests that his research lab isn't the first place a robotic lawn mower has been conceived. "The CIA has an autonomous lawnmower," he says, required for sensitive locations where the fewer people hanging around, including yard maintenance workers, the better. "I understand it's kind of a wooze," he said like a proud parent. "I've got a more manly robot."

Ohio Seed is a distribution company with approximately 60 percent turfgrass seed and 40 percent forage seed, with sales primarily in Ohio and Michigan. Ohio Seed owners Kevin and Harry Keckley are signing long-term employment contracts with AgriBioTech.

Van Dyke is a production company with a wholesale distribution base of a number of forage crops, such as red clover and crimson clover. These operations will complement AgriBioTech's current forage operations, providing the company with a good, reliable source of supply for these important forage crops. Terry Lewis and Ron Brandt are signing long-term employment contracts with AgriBioTech.

LVP specializes in the distribution of turfgrass seed and ancillary products to golf courses and lawn and garden products to home improvement centers, mass merchants and independent nurseries in Nevada, California, Utah, Idaho and Wyoming.

AgriBioTech said that this acquisition will increase its access to golf courses and will give the company experienced management in lawn and garden products which may be expanded to other distribution territories of the company.

The company has completed 16 acquisitions since Jan. 1, 1995. Its current level of annualized net sales of approximately $326 million, including the above four acquisitions and the previously announced pending acquisitions of Seed Corp. of America and Discount Farm Center Inc.