

FOCUS

Teaching, Research and Outreach in
the Division of Agriculture, Forestry
and Veterinary Medicine

MSU-Developed Products Go to Market

By Bob Ratliff

University research is often thought of as having little connection with the real world, but the truth is, many of the products and technologies in use today had their beginnings on university campuses. That is especially true of agriculture-related products.

Mississippi State has a long history of research leading to commercial products. The 1947 release of anhydrous ammonia for agricultural use, considered one of the top 10 events of modern agriculture, was the result of research by two Mississippi State scientists, W.B. Andrews and Felix Andrews. The Delta Branch Experiment Station in Stoneville was a testing ground for early mechanical cotton pickers, and millions of cattle nationwide have grazed on Marshall ryegrass since it was developed at the North Mississippi Experiment Station in Marshall County and released to the public in 1980.

Ensuring that the public benefits from the school's research is part of MSU's mission as a land-grant institution. The university's Office of Technology Commercialization oversees the identification, protection, marketing and licensing of intellectual properties developed by MSU faculty, staff and students.

Income from successfully commercialized MSU products is shared with the inventors and the university.

"The aim of this office is to better help society benefit from the new ideas, inventions and breakthrough discoveries continually emerging from research and other scholarly activities generated at MSU," said Charles Rivenburgh, director of the office.

"Commercialization of products and technologies generated by MSU research helps foster economic development in the state and the nation."

There is no one-size-fits-all approach to marketing university technology, according to licensing associate Chase Kasper, who works with commercialization of products from the Division of Agriculture, Forestry and Veterinary Medicine.

"The technologies developed at the university come in all shapes and forms," he said. "In the ag sector, however, the products that come to us are usually closer to being ready to market."

Recently developed products in the division include grasses developed for use on athletic fields and other targeted uses, new food products, and a different way to protect buildings and trees from termites.

"Products currently in development include native grasses for biofuel use and a device to detect and manage nematode populations that could change the way nematode infestations in crops are handled," Kasper said. "We expect to see more use of university expertise applied to developing the technology and equipment needed in support agriculture."

The following articles tell the story of some of the MSU-developed items that either currently on the market or awaiting licensing. They are representative of many more already in use or under development.

MSU Grass Reaches Far and Wide



Bulldogs developed it, but now tigers and diamondbacks play on it. MS-Choice is one of four Bermuda grass cultivars developed through Mississippi State University research and patented by the university.

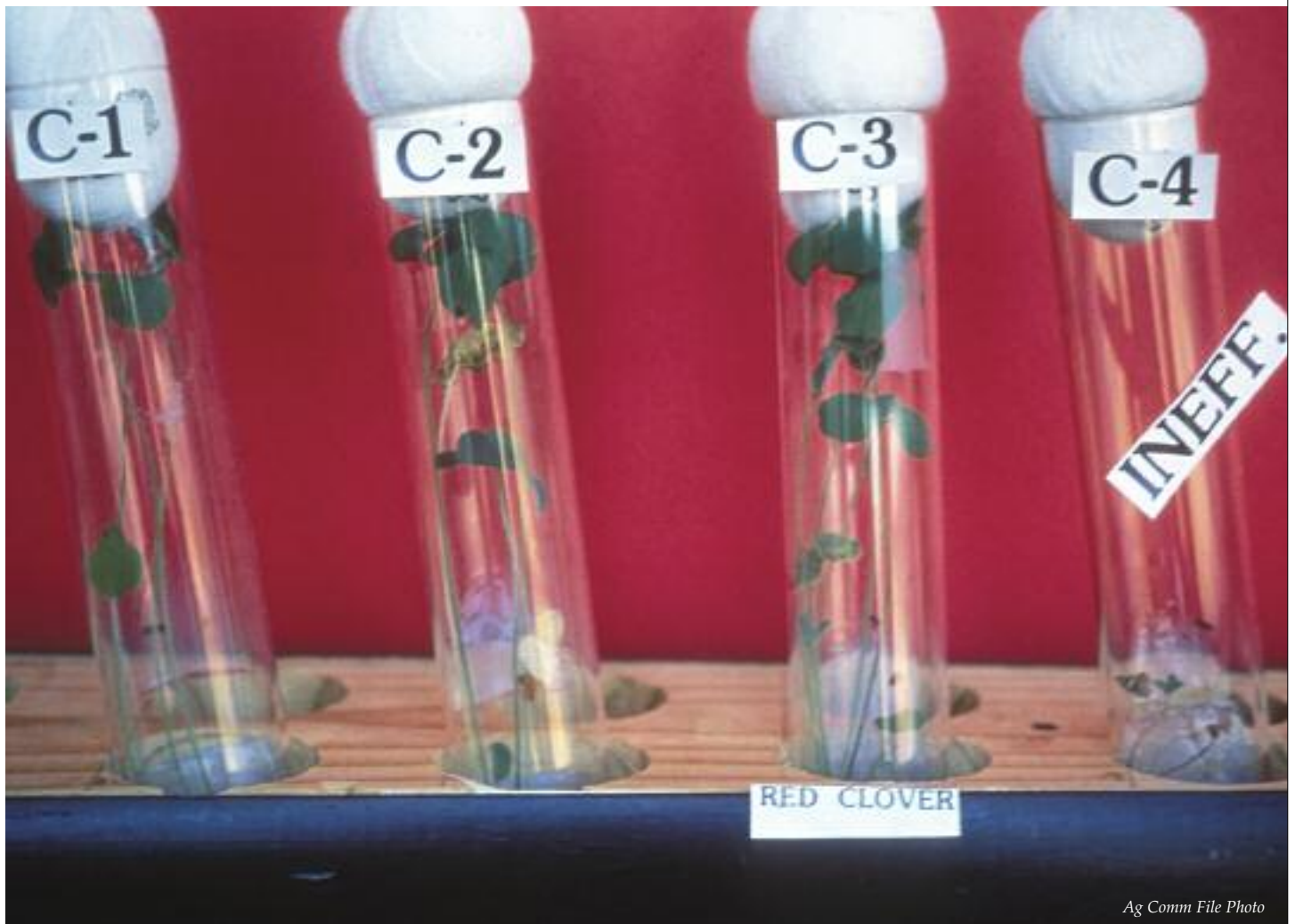
For almost three decades, MSU agronomists have searched high and low, east and west, front lawn and country cemetery for just the right sprigs of Bermuda grass for their

breeding program. The result has been cultivars with distinct characteristics tailored for home lawns, golf courses, athletic fields and other locations.

The four patented cultivars are MS-Choice, MS-Express, MS-Pride and MS-Supreme. The star of the lineup is MS-Choice, said Wayne Philley, a research associate in the Plant and Soil Sciences Department.

"MS-Choice creates a dense biomass that provides a cushion of grass so players are running on top of the grass rather than through it," Philley said. "It also has the dark green color most often desired for athletic fields and is shade tolerant."

The cultivar is licensed for sales in the western U.S. to West Coast Turf, which has operations in Arizona, California and Nevada. The company markets the grass under the name Bull's-Eye Bermuda and BOBSod. It is the official turf of the Arizona Diamondbacks baseball team and is on numerous other professional, college and high school baseball and foot-



Ag Comm File Photo

ball fields in the West. West Coast Turf also donates the grass to the Arizona Diamondbacks Foundation "Diamonds Back" Youth Field Building Program, which has provided turfgrass and other supplies to more than 20 youth baseball and softball fields in Arizona.

MS-Choice also is licensed to Charles Williams and Associates. The Fayetteville, Tenn., turfgrass producer markets the cultivar as Revolution, which was installed on the field at Louisiana State University's Tiger Stadium prior to the 2006 season.

"They say they had the best football field they've ever had at LSU this past season," Williams said. "We are currently developing promotional materials for the use of Revolution in industrial and home landscape situations, as well as for sports fields."

Gregg Munshaw joined the MSU faculty and the grass-research program in 2004. As a plant physiologist, Munshaw focuses on the growth and other characteristics of the cultivars under development. He and Philley are continuing to work on Bermuda grass and other cultivars.

"We have two new St. Augustine cultivars in the process of being patented," Philley said.



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Research Tunes in on Termites

Research by Mississippi State University scientists has yielded a new weapon in homeowners' battle with wood-destroying termites.

Terry Amburgey of MSU's Forest Products Laboratory and employees of the U.S. Forest Service were called to Hawaii by the U.S. Navy about 14 years ago to combat infestations of Formosan termites in wooden poles supporting communications antennas at a naval base.

While there, the group discovered that termites are attracted to active antennas but not those that are inactive. The findings in Hawaii led to a series of experiments by Amburgey, MSU research associate Mike Sanders and lab technician Craig Bell.

"We documented that subterranean termites are attracted to electric fields of certain wavelengths," Amburgey said. "We patented, through the university, the technology used in the initial research."

A decade later, Kevin Ragon, a doctoral student under Amburgey's direction, developed experiments demonstrating that both native termites and the imported and extremely destructive Formosan variety are attracted to certain electric wavelengths. Additional research led to another MSU patent application based on the work by Ragon, Amburgey, Sanders and MSU electrical engineering professor Pat Donohoe, who helped determine the exact frequency and intensity needed to alter termite behavior.

"We created a device to emit the exact frequencies required to manipulate termite behavior," Ragon said. "Research shows that termites communicate through vibrations. The frequencies used in the MSU technology mimic these vibrations, which attract termites."

The technology patented by the university has been licensed to Ragon, fellow forest products doctoral student Shane Kitchens and Amburgey. They have formed TermiSys Technologies to handle the business end of the development of the technology.

"The fact that termites are random foragers has always been the Achilles' Heel of termite baiting systems," Kitchens explained. "Because of that, many building sites are still treated with traditional liquid termiticides that require several hundred gallons of the product to be applied for subterranean termite control."

The TermiSys technology, he added, will make bait sta-



Marco Nicovich

Shane Kitchens, left, and Kevin Ragon have developed a device that uses electric wavelengths to attract wood-destroying termites to bait stations. The Mississippi State University forest products students worked on the technology as part of their graduate program and are partners in TermiSys Technologies, a company formed to commercialize the MSU-licensed technology. (Photo by Marco Nicovich)

tions more effective by using electric wavelengths to draw the insects to the bait and increase the bait acceptance.

"The TermiSys system is a green technology because it cuts down significantly on the amount of insecticide needed to protect a building from termite damage," Kitchens said.

In addition to protecting buildings, the MSU students hope to use the technology to protect urban trees, like those located in New Orleans' historic French Quarter.

"These oaks are just one of an estimated 50 species of plant materials susceptible to attack by Formosan termites," Ragon said. "We are researching devices that can be placed near trees and other plants to repel termites."

Information about the new termite control technology and TermiSys Technologies is available on the Web at www.termisys.com.