

in brief

preserving identity
adds cost & value to crops

Marco Nicovich

By Bonnie Coblenz

One of many changes in agriculture is a move to produce crops with specific traits for particular end uses, but producing those crops can be risky business.

An identity-preserved crop is one in which specific genetic traits are known to exist. Special steps have been taken in buying, planting, harvesting and storing the genetically modified seed to ensure crops with these traits are not mixed with other crops.

Darren Hudson, MAFES agricultural economist, recently studied the extra costs and risks associated with growing identity-preserved crops.

“Advances in biotechnology have allowed for the production of crops that are tailored toward the needs of the end consumer,” Hudson said. “Convincing producers to grow these crops can be a challenge because they are new, and there are added costs.”

Examples of genetically modified crops with carefully preserved identities include golden rice, high-lysine soybeans, and high-oil corn and soybeans. The high-oil grains and high-lysine soybeans are used to improve feed productivity, and golden rice is high in vitamin A.

When farmers plant a crop with specific genetically modified traits, that grain must be tracked at all points and separated from traditional grains in storage. Because the grain has

certain known, special traits, it can be sold for a premium, but there are also added production costs.

“There are physical costs of having to maintain separate equipment and storage, and the farmer has to devote time and energy into developing a procedure to follow to be able to document these separate measures,” Hudson said. “We don’t know what all the added costs are at this point because some of these products aren’t on the market yet.”

Hudson cowrote a study on the cost of identity preservation with Tom Jones, retired agricultural economist with Mississippi State University’s Extension Service. This study, which appeared in the December 2001 issue of the *Journal of Agricultural and Applied Economics*, estimated the added production cost of identity preserved soybeans to average 46 cents a bushel in Mississippi.

Because of this added cost and without a guarantee that there will be a continuing market for genetically modified crops, many producers are hesitant to produce identity-preserved crops.

“Since a lot of these products are not on the market, producers don’t have a full idea of what the intrinsic costs are. Most are being grown under contract at this point,” Hudson said. “There’s always risk, but identity preservation itself does not add a lot of price risk. The risk is if you invest money in seeders or on-farm storage and you have a one-year contract, who’s to say they’re going to come back next year with another contract.”

Uncertainties in the market are mostly due to the new technologies’ progress through the approval process and the acceptance or skepticism they receive from consumers.

“As the markets develop, there is some concern whether buyers will be there, but as the markets stabilize, the risks associated with producing the identity-preserved crop lessen and the premiums paid for the crop will likely decline,” Hudson said.

The number of Mississippi producers growing identity-preserved crops is low, but so is the number of identity-preserved products available. Hudson said he expects both the number of such products to grow, and with it, the number of state producers growing these crops.

“I think Mississippi producers are looking at the process with a healthy skepticism and are carefully examining the costs and benefits to them,” Hudson said.



Fred Faulk, University Relations

From left to right, BASF Corporation research scientist Bobby Watkins, MAFES weed scientists Dan Reynolds and David Shaw, BASF Corporation research scientist Alvin Rhodes and Jud Skelton, director of development for agriculture and life sciences at MSU, pause in front of a mobile chemical handling unit donated by BASF Corporation for safe pesticide handling.

Conference Assesses Space-Based Research Efforts

By Charmain Tan Courcelle

Spatial technologies have provided producers and agribusinesses new methods to manage their crops, animals and land. But the same technologies have also presented a number of challenges, including how to manage the information generated. MAFES scientists met last winter to assess their efforts at helping growers face these problems.

Working under the auspices of the USDA-funded Advanced Spatial Technologies in Agriculture (ASTA) project, the group of 20 MAFES scientists are exploring how best to use spatial information in the areas of soil fertility, pest management and animal and aquaculture production. Members of this group are also developing engineering technologies that will improve accuracy and facilitate automation in these systems.

David Laughlin, MAFES agricultural economist and ASTA project coordinator, said the conference provided project scientists the opportunity to evaluate their progress, as well as the progress of their peers, and to identify future research priorities and directions. In addition, a panel of industry and academic scientists with similar research programs from outside of Mississippi State University helped review the project.

"Another goal for the conference was to promote communication among scientists involved in different aspects of the project and to encourage new collaborations," Laughlin said.

The ASTA project has grown from an initial set of eight subprojects in 1997, which was the first year of funding, to more than 20 projects in 2001. Over its five-year history, the project has brought more than \$3.5 million in federal grants to MSU and provided leveraging for other funds.

Laughlin said spatial technologies have changed the face of agriculture. At MSU, scientists are using remote sensing, yield monitors and global positioning systems and geographic information systems technologies to address agribusiness needs and to assist with decision making in precision farming and natural resource management.

"The ASTA project addresses the breadth of issues facing our producers in this state, but the results of this research will also apply to other areas of the country," he said.



Jim Lytle

ASTA project coordinator David Laughlin, left, enjoys a conversation with Remote Sensing Technologies Center director David Shaw during a conference break.

MSU Ag Research Ranks in Top Five

A report from the National Science Foundation ranks Mississippi State fifth in the nation in funding for research in the agricultural sciences.

The university generated \$68.4 million in research and development expenditures for the agricultural sciences in fiscal year 2000, an increase of almost 18 percent over fiscal year 1999 figures. MSU previously ranked eighth in agricultural sciences research.

Vance Watson, interim vice president for the MSU Division of Agriculture, Forestry and Veterinary Medicine and MAFES director, said the achievement reflects the commitment the state has to agriculture and the economic importance of the agricultural sector in Mississippi and the region.

"Our move up to the No. 5 spot is a direct result of the dedication of our faculty and staff. They have stepped up and leveraged the investment made by the state of Mississippi. Their commitment has increased the quality and level of agricultural research conducted at this university," Watson said.

Agricultural research dollars at MSU are divided among MAFES, the College of Veterinary Medicine, Forest and Wildlife Research Center and MSU Extension Service, which provides the university's main outreach effort.

Other universities included in the top five list are the University of California at Davis (\$128 million), University of Georgia (\$87.4 million), University of Florida (\$87.3 million) and North Carolina State University (\$70.1 million).

CALENDAR OF UPCOMING EVENTS

July 9, 2002 Turfgrass Research Field Day, MSU	Sept. 28, 2002 North Miss. Garden Expo, North Miss. R&E Center, Verona
August 8, 2002 Agronomic Row Crops Field Day, North Miss. R&E Center, Verona	Oct. 18-19, 2002 Fall Flower & Garden Festival, Truck Crops Branch, Crystal Springs
August 14, 2002 Cotton Field Day, Delta R&E Center, Stoneville	November 21, 2002 MSU-MAFES Annual Production Sale, MSU
August 15, 2002 Rice and Soybean Field Day, Delta R&E Center, Stoneville	

in brief

MAFES Researchers Write for Cotton Books

By Bonnie Coblentz

Two MAFES researchers helped compile a reference book series on various aspects of cotton production.

Charles Snipes and Aubrey Harris were authors and editors in the Cotton Foundation Reference Book Series, published by the Cotton Foundation, an affiliate of the National Cotton Council. Snipes coauthored three chapters and was one of two editors for the edition on harvest management. Harris coauthored a chapter on boll weevil eradication in Mississippi and was one of six editors for the edition on boll weevil eradication.

“We tried to write in terms that would be beneficial to a large group, including university researchers, consultants and growers,” Snipes said.

Cotton Harvest Management: Use and Influence of Harvest Aids, book five of the series, is based on five years of research conducted in 11 to 15 locations across the Cotton Belt. Data from this research were used to substantiate the harvest aid management procedures discussed. Snipes, plant physiologist and weed scientist at the Delta Research and Extension Center (DREC) in Stoneville, worked on this book.

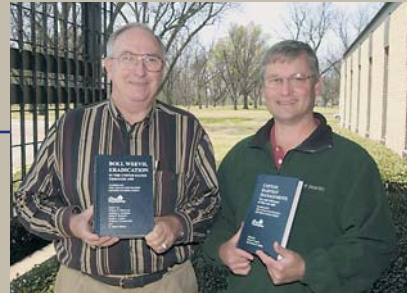
Harris worked with James Smith, DREC head, to write a chapter about boll weevil eradication in Mississippi. The chapter appears in book six of the series, titled *Boll Weevil Eradication in the United States since 1999*. The book emphasizes the people, places and events in the boll weevil eradication story.

“The audience will be researchers, Extension specialists and agents, policy makers interested in the boll weevil eradication program and its application to future regional programs, and many growers,” Harris said. “This is probably the biggest region-wide pest management program that has ever been implemented.”

The Southeastern Boll Weevil Eradication Foundation named Harris to the committee of six that organized and edited the book. Since 1995, Harris has been chairman of the Mississippi Boll Weevil Eradication Technical Advisory Committee. He is a research entomologist at the DREC.

The Cotton Foundation released these reference books in December 2001.

Marco Nicovich



MAFES scientists Aubrey Harris, left, and Charles Snipes pose with the books they helped author and edit.

Inventor's Gift Holds Engineering Promise



Marco Nicovich

From left to right, North Farm superintendent Mitchell Roberts, MAFES agricultural engineer Filip To, Rotifer inventor Norman Haigh and MSU mechanical engineering professor Bill Jones discuss applications for the patented excavator.

By Charmain Tan Courcelle

Mississippi State University engineers will improve and develop new applications for a recently patented rotary excavator.

Norman Haigh of Natchez said he invented the rotary excavator — called a Rotifer in the patent application — to address the need for a fast, efficient and economical method for draining land in flood plains like the Mississippi Delta before development. He assigned 50 percent of the patent rights to his invention to MSU.

The Rotifer is a self-propelled rotary excavator that can make a three-by-three-foot trench at a rate of approximately three feet per minute depending on soil conditions. It uses lasers to guide the position and depth of a rotary cutting device during drainage ditch formation and maintenance. Included in the Rotifer design is an adjustable shield that directs the spray of excavated soil (the spoils).

“The original intent for the excavator was to help make drainage ditches or to make them perform better,” said MAFES agricultural

Updated Fishy Software Supports Catfish Industry

By Bonnie Coblentz

Catfish producers have an updated tool to help them remain afloat in financial hard times.

Fishy 2002 is the latest version of computer software developed in 1982 at Mississippi State University to aid the aquaculture industry. Wallace Killcreas, Fishy programmer and MAFES agricultural economist, said the program aids management and decision making.

“Adequate records and up-to-date management tools are essential in any agricultural operation in good and bad times,” Killcreas said. “Good records are a necessity for income tax preparation, for making decisions on whom to do business with and in deciding how to best manage future production.”

Fishy 2002, like its predecessors, keeps records of all aspects of fish production, and it analyzes and makes reports that allow farmers to track fish numbers, feedings, weights and sizes.

Fishy supports historical and simulated information with preprogrammed background data. Producers enter historical data such as feed given, fingerlings stocked and fish moved. Simulated information includes such future aspects as harvest schedules and potential fish production. Background data includes feed conversion ratios and feeding calendars.

Killcreas is urging catfish farmers who aren't already using the free software to begin before the production season gets under way this year.

“Fishy can be used to book your feed for next year,” Killcreas said. “Feed needed, coupled with current feed price, can be used to aid in obtaining a line of credit this year.”

The current version provides simple screens to allow users to enter data for fixed costs such as land and equipment and annual operating expenses. These data are combined with Fishy simulated data to estimate future profitability of the fish farm.

Farmers can use Fishy to schedule future harvests if they enter current data on each pond. This allows producers to know which pond to harvest next if a particular pond cannot be harvested.

“By diligently entering data such as feed fed, fish stocked, fish lost, fish moved and fish harvested every week, Fishy will accumulate records and give you reports from your farm that will help you plan for next year,” Killcreas said.

Fishy's chronological pond report can provide detailed information on all of a particular pond's events. If a pond is a poor producer, the farmer can review the pond report and possibly develop new management strategies to improve it.

“Since feed is still nearly 50 percent of fish production cost, Fishy provides for close feed scrutiny,” Killcreas said.

One of Fishy's more popular features is its cost. It can be downloaded free from MSU at www.agecon.msstate.edu/wek, or producers can call (662) 325-2672 to order a copy on CD.

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engineer Filip To. “But there are opportunities for many other uses. For example, the excavator could be used to construct building foundations or to build and maintain water, sewage and other pipelines.

“The technology can also be fitted with other mechanisms to allow the excavating and transporting of spoils to be performed in one operation — a cost-saving capability for many applications.”

To leads a team effort to extend the range of applications for the excavator. During the first phase of development, the group will auto-

mate navigation and control of the rotary cutting device, which now has to be steered by the excavator operator. They will also adapt the technology for other nonfarm operating environments.

“This rotary excavator is a good ‘platform’ on which other applications can be developed,” To said. “We're very excited about the opportunity to further develop this technology. We would like to invite and work with equipment manufacturers to explore the possibilities.”

MSU owns a full-scale working prototype of the excavator that was

built by Bobby Ewing of Jonesville, La., and donated by Haigh. University researchers will use the prototype in field tests and during development studies.



Marco Miovich

The Rotifer sprays the spoils from a newly formed ditch.