January 2011

Arkansas Rice Research and Promotion Board

ARKANSAS RICE CHECK-OFF

Arkansas rice

At a Glance

COCHRAN TO LEAD U OF A DIVISION OF AGRICULTURE — University of Arkansas System President B. Alan Sugg appointed Mark J. Cochran as vice president for agriculture, U of A Division of Agriculture, effective January 4, 2011. Cochran served as Division of Agriculture associate vice president for research and director of the Arkansas Agriculture Experiment Station.

Cochran will lead the university's coordinated agriculture program, which includes the Cooperative Extension Service and the Agriculture Experiment Station. He replaces Dr. Milo J. Shult, who served 18 years in the position.

Cochran earned a B.S. in Agriculture Economics from New Mexico State University in 1974. He received his M.S. in 1976 and a Ph.D. in 1982, both in Agriculture Economics from Michigan State University.

WINDHAM APPOINTED ASSOCIATE VP FOR AGRICULTURE – EXTENSION — Tony Windham was appointed associate vice president for agriculture and director of the Cooperative Extension Service. He served as interim head of the University of Arkansas Cooperative Extension Service since June 2009. Before being named interim director, Windham was assistant director for Agriculture and Natural Resources at the University of Arkansas Cooperative Extension Service, a position he kept as interim.

Windham grew up on a farm near Forest, Miss. He earned a B.S. in Ag Engineering Technology and Business in 1981, his M.S. in Ag Economics was awarded in 1985, and a Ph.D. in Ag Economics in 1988, all from Mississippi State.

WILSON APPOINTED RREC INTERIM DIRECTOR — Charles E. "Chuck" Wilson Jr. has been appointed interim director of the Rice Research and Extension Center at Stuttgart. Former director Christopher Deren is now coordinator of the hybrid rice breeding program started in 2009. Wilson, a professor of crop, soil, and environmental sciences, has served since 2001 as Cooperative Extension Service rice agronomist based at RREC.

A native of Crittenden County, Wilson has a B.S. degree in plant science from Arkansas State University and M.S. and Ph.D. degrees in soil fertility from the University of Arkansas.

DD50 HAS HELPED FARMERS FOR 40 YEARS — For 40 years, researchers, county agents and farmers have used Rice DD50 to help determine timing for various farm management practices. DD50 is a computerized management program that uses heat units to forecast growth stages of rice. Knowing the growth stages allows a farmer to predict certain practices, such as herbicide cutoff dates and timing of fertilizer and fungicide applications.

DD50 was created at the Rice Research and Extension Center in Stuttgart, and promotion board-funded research keeps the database current. New varieties added to DD50 include Clearfield varieties 142AR, 181AR, 111, 26 and Roy J.

New RREC facilities 'keep the land grant spirit alive'

by Howell Medders

Rice producers, industry leaders and officials from the University of Arkansas System and other agencies cut the ribbon April 15 to mark the opening of the new 34,000-square-foot, !12.4 million laboratory, meeting and office facilities at the Rice Research and Extension Center near Stuttgart.

University of Arkansas Vice President for Agriculture Milo J. Shult said, "While some campuses across the nation have strayed from their land grant mission of serving their states by educating their citizens, discovering new knowledge and putting that knowledge to work to improve their quality of life, the Division of Agriculture is keeping the land grant spirit alive in Arkansas."

The division updated research and extension facilities across the state to achieve that goal. Almost every facility in the state received new construction or renovation over the last 15 years.

Rich Hillman of Carlisle, a member of the Arkansas Rice Research and Promotion Board, which contributed $2.3 million to the project, said the new facilities "advance Dr. Shult's vision that the University of Arkansas be home to the premier center for public rice research in the nation." The contribution was from part of a European Tariff Rate Quota payment

(cont'd. on page 5)

photos by Howell Medders

RIBBON CUTTING — From left, B. Alan Sugg, U of A System president; Mark Waldrip, board of trustees; Chris Deren, RREC director; Milo Shult, former vice president for agriculture; John Ed Anthony, board of trustees; Rich Hillman, Arkansas Rice Research and Promotion Board; Richard Bell, Department of Agriculture; Tony Windham, Cooperative Extension Service director; Lalit Verma, interim dean, Dale Bumpers College of Agricultural, Food and Life Sciences; Terry Rasco, architect; Bob Butler and Lewis May, May Construction; Bob Hyneman, board of trustees; Mark Cochran, vice president for agriculture; and David Pryor, board of trustees.

The Division has updated almost every research and extension facility in the state over the last 15 years.

From the chairman

Wayne Wiggins III, chairman, Arkansas Rice Research and Promotion Board

Dear Fellow Arkansas Rice Farmers,

2010 not only saw great challenges for the rice industry in Arkansas, but also great accomplishments. We planted a record number of acres, but hot, dry conditions took their toll on yields. While we made great strides and produced a bigger and better crop with fewer resources, this year reminded us that there is always more research to be done.

2010 also saw dedication of the new University of Arkansas Division of Agriculture Rice Research and Extension Center. The Rice Research and Promotion Board allocated $2.3 million of Tariff Rate Quota funds to help build the state-of-the-art research facility. Arkansas is the top rice-producing state in the nation, and now we have a world-class station befitting our status. And the U of A now has a hybrid rice breeder and an aromatic rice breeder on staff.

"Arkansas Rice" is published annually to bring the results of the research you fund back to you. The nine farmer-members of the Board welcome your feedback. Please don't hesitate to contact any of us.

Sincerely,

Wayne Wiggins III, Chairman
Arkansas Rice Research and Promotion Board

Arkansas Rice Research and Promotion Board Members

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Seed treatments control pests, may increase vigor

by Kimberly Dishongh

Rice yields are up in fields where seed treatments were used, meaning treatments are appearing effective in strengthening plants and in controlling underground pests like grape colaspis and water weevils.

"These products are helping us out quite a bit, and when we look at resulting yield on all these trials, what we have seen the last three years is about a 10 bushel per acre increase over the untreated check, so there's some obvious value to these products," said Gus Lorenz, entomologist for the University of Arkansas Division of Agriculture.

About six or seven years ago, growers lost the only treatment that worked to control these pests. Lorenz was approached by division rice agronomist Chuck Wilson and Rick Cartwright, division plant pathologist, about finding a new way to control grape colaspis and rice water weevil. Lorenz began evaluating three new seed treatments that weren't labeled for use against grape colaspis and water weevils.

Studies showed positive results by 2007 against water weevils when applying Dermacor. Arkansas, Louisiana, Texas and Mississippi requested and received from the Environmental Protection Agency a regional exemption under Section 18 of the Federal Insecticide Fungicide and Rodenticide Act to use the product on rice crops in 2008.

Dermacor was used on 20,000 to 30,000 acres in 2008. It did a great job of controlling water weevils, but it wasn't as effective as anticipated on grape colaspis.

Another product, Cruiser Max, had proven to be an effective seed treatment on pests in cotton, corn and soybeans, so Lorenz applied for a section 18 for use in controlling grape colaspis in rice in 2009. He was turned down three times, but with several growers experiencing 50 percent yield loss that year, there was a serious problem.

Finally, with support from Milo Shult, then vice president for agriculture for the division, the Arkansas Rice Promotion Board and several other rice organizations, the EPA approved the Section 18 in 2009.

"Our data continues to show us these products provide really good control of rice water weevils. Based on success in our trials, Cruiser Max and Dermacor were labeled for rice in 2010, and NipSit INSIDE will be available next year on a limited scale," said Lorenz. "Cruiser and NipSit appear to have a little better control of grape colaspis, particularly in the Grand Prairie and White River regions where grape colaspis is the number one pest."

Fred Miller

GAINING CONTROL — Gus Lorenz, U of A Division of Agriculture entomologist, explains control methods for rice water weevil and advances made against grape colaspis.

Where seed treatment has been used, Lorenz said, there is yield enhancement that may not be directly related to insect control.

"It makes the rice come out of the ground better at emergence and in a lot of cases it can increase plant height over the untreated check," he said. Often insect control is a factor, but frequently "we see yield increase even where we don't see a lot of insect pressure, which tells us it's having some kind of plant vigor impact." ■

Inquiries should be made to the Arkansas Rice Research and Promotion Board, P.O. Box 31, Little Rock, AR 72203-0031. Telephone (501) 228-1268.
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Researchers track Arkansas' rice economy

by Fred Miller

Agricultural economists at the University of Arkansas Division of Agriculture continuously track key markets and production costs that have an impact on Arkansas' rice economy.

An economic analysis of annual rice yields in response to nitrogen application rates was used to estimate the application rates that would give growers the most favorable crop prices when compared to the cost of fertilizing, said Brad Watkins, agricultural economist at the Rice Research and Extension Center. The study was conducted at four rice research locations in eastern Arkansas and used the average rice prices and nitrogen costs for 2006-2008.

Economic optimum nitrogen rates varied by location and soil type, Watkins said. For Sharkey clay at the Northeast Research and Extension Center at Keiser, 162 pounds per acre gave the optimum price return. Profitable nitrogen application ranges that produced net returns within $1 of that optimum price at Keiser were 155 pounds per acre to 169 pounds per acre.

Rice yields were typically larger for the high fertility treatments, but grain yields were not enough to justify the additional costs.

The most favorable rate for Perry clay soil at the Rohwer Research Station in Desha County was 167 pounds per acre, with a profitable range of 161 pounds to 174 pounds per acre. For DeWitt silt loam at the Rice Research and Extension Center near Stuttgart, the optimum rate was 135 pounds per acre and the range of 128 to 140 pounds per acre was estimated to return profits within $1 of the optimum.

For Hillemann silt loam at the Lake Hogue Research Farm near Weiner, the optimum rate was 122 pounds per acre, Watkins said. Application rates to produce net returns within $1 of that rate were 103 to 115 pounds per acre.

In economic analysis of tillage and fertility practices in fields with continuous rice crops, economists found the highest net returns were realized with conventional tilling and low fertility applications, Watkins said. The study produced returns above total costs of $89 per acre with these practices.

No-till continuous rice with low fertility resulted in returns of $71 per acre, Watkins said. No-till fields with high fertility came next with $57 per acre and conventionally tilled fields with high fertility returned $36 per acre.

"Low fertility" practices in the study used a single pre-flood application of 100 pounds per acre of nitrogen, 40 pounds per acre of phosphorus and 60 pounds per acre of potassium. "High fertility fields" increased the applications to 150 pounds per acre nitrogen, 60 pounds per acre phosphorus, and 90 pounds per acre of potassium.

The results indicate that rice yields were typically larger for the high fertility treatments, but grain yields were not enough to justify the additional fertilizer costs, Watkins said. Results of this analysis are found in B.R. Wells Rice Research Studies 2009, which is available from the Arkansas Agricultural Experiment Station.

A study of rice and soybean yield potential indicates that rice producers have roughly an 8-week planting window to plant rice following rice in the same field without yield penalties, Watkins said. The window ranges from roughly the last week of March through the second full week of May.

The planting window for soybeans following rice is much narrower, Watkins said, with maximum yields occurring for soybeans planted during the last week of April through the first full week of May.

"Timely planting is more critical for soybeans than rice," Watkins said.

Division agricultural economists developed baseline estimates of U.S. and global rice economies as part of the Food and Agricultural Policy Research Institute 2010 U.S. and global outlook, said Eric Wailes, professor and holder of the L.C. Carter endowed chair in Agricultural Economics.

Macroeconomic and policy data along with supply and demand estimates are used to provide a baseline evaluation of the Arkansas and U.S. rice economy, Wailes said. This baseline is used to evaluate the effects of alternative policy proposals being considered by the U.S. Congress and the impacts of policies in other countries.

International rice prices have declined as production responses to high prices in 2008 and 2009 resulted in expanded supply in the U.S. and many Asian countries, Wailes said.

Improved productivity with wider adoption of hybrid varieties and a return to more normal monsoon rains in South Asia have increased yields, Wailes said.

"Assuming normal weather and no change in policies, the model projects U.S. farm prices to be in the range of $4 to $4.75 per bushel over the baseline period," Wailes said.

The FAPRI baseline and representative farm models are being used to evaluate the effects of alternative funding available for traditional price and income support programs, Wailes said.

Baseline funding for the next 2012 farm bill is expected to be reduced, Wailes said. Analysis has been conducted to determine impacts on Arkansas rice farms of reductions in loan rates, direct payments, target prices and changes in the ACRE program triggers.

Wailes said the consequences of reduced support is being analyzed to inform the industry, farmers and congressional representatives of the challenges that this tighter farm bill budget will pose for Arkansas rice producers. ■

Fred Miller

TOP CROP — Arkansas is the leading producer of rice in the U.S. Division of Agriculture economists track key markets and production costs to help growers make the most of their crops.

Economic Optimum N Rates and Profitable N Ranges by Research Location

				Low[1]		High[1]	
Location	EON[1]	EON Yield	Max. Return	N Rate	Yield	N Rate	Yield
	lbs ac^{-1}	bu ac^{-1}	$ ac^{-1}	lbs ac^{-1}	bu ac^{-1}	lbs ac^{-1}	bu ac^{-1}
RREC[2]	134[3]	176	901	128	175	140	177
LH	109	160	828	103	160	115	161
NEREC	162	167	833	155	166	169	168
SEREC	167	177	883	161	176	174	177

[1] EON = Economic Optimum N rate. "Low" and "High" approximate the range of N rates producing returns within ! 1 ac-1 of the maximum return

[2]RREC = Rice Research and Extension Center (Stuttgart, Arkansas); LH = Lake Hogue Research Farm (Weiner, Arkansas); NEREC = Northeast Research and Extension Center (Keiser, Arkansas); SEREC = Southeast Research and Extension Center (Rohwer, Arkansas).

[3]Calculated using a ! 5.58 bu-1 rice price, a ! 0.4649 lb-1 N price (! 350 ton-1 urea price) and a ! 0.1522 lb-1 N (! 0.07 lb-1 urea) custom application cost.

Pests still suspected in the spread of rice disease pathogen

by Fred Miller

The panicle rice mite, which has devastated rice crops outside North America, has not made an appearance in Arkansas rice fields, said Ashley Dowling, entomologist with the University of Arkansas Division of Agriculture.

"The panicle mite consistently pops up in research greenhouses," Dowling said, "but we haven't found it in open fields." Dowling collects samples from Arkansas' rice-producing counties and receives samples sent from Louisiana and Texas. Except for an occurrence in Texas a couple of years ago, which was aggressively eradicated, the pest has been absent.

Research greenhouse outbreaks have occurred in virtually every location where rice studies are conducted, Dowling said, including Texas A&M, Cornell University, University of California-Davis and other institutions. Dowling said the panicle mites found in research greenhouses probably came in with rice seedlings imported from nurseries in the Caribbean and Central America.

"It'll pop up in a greenhouse, they'll eradicate it and it'll pop up again later," Dowling said.

As for why the panicle mite hasn't occurred in open fields, Dowling speculates that greenhouse quarantines have been 100 percent effective, or the panicle mite can't overwinter in Arkansas.

"The only way to know if it can overwinter here is to put it out and monitor for it," Dowling said. "But no scientist wants to risk letting it out."

The panicle mite feeds in the leaf sheath until heading, Dowling said. Then it migrates into the endosperm and eats the rice seed from the inside out. "You'll find a lot of empty rice hulls," he said.

Panicle mite is native to tropical Asia, where it causes damage, but not to the extent seen in the Americas, Dowling said. There may be natural enemies or other reasons the pest's impact is limited in its native range. In the Caribbean, Central America and South America, where it is an invasive species, panicle mite can devastate rice fields.

PESTS — (left) A USDA image shows an adult male panicle mite. The tiny pest is a known carrier of plant diseases. (right) In late 2010, stinkbugs were suspected of carrying bacterial panicle blight.

Where present outside of North America, panicle mite may account for up to 20 percent yield loss in infested fields, Dowling said. The mite is also associated with pathogens that cause such diseases as fungal sheath rot and bacterial panicle blight. In parts of the world where the pest appears and may move pathogens around a field, yield losses can be as high as 80 percent. The relationship between outbreaks of bacterial panicle blight, hot growing seasons and potential vectors is tricky. In North America, the bacteria that cause panicle blight are present in fields, but not normally at levels that cause severe disease. Researchers would like to see whether native mites or other insects are responsible for aiding panicle blight outbreaks during hot years like 2010.

Near the end of the 2010 rice season, stinkbugs came under suspicion as a possible carrier of bacterial panicle blight. Some stinkbugs collected in infected fields tested positive for the disease, but Dowling said the sample was too small to know if the insects transmitted the disease to the plants or if they picked it up from the infected plants.

Dowling said he will continue investigating native mites, stinkbugs and other pests that may be transmitting the pathogen that causes the disease. ■

Resistant weeds, lack of new technology are growing problem for producers

by Elizabeth Fortune

Herbicide-resistant weeds are an intensifying problem regardless of the crop. For rice producers, the problem is barnyard grass that's resistant to almost every available product.

"We only have a handful of products available to kill barnyard grass, and this weed is resistant to all but about one or two of these products," said Bob Scott, weed scientist with the University of Arkansas Division of Agriculture.

Compounding the problem of herbicide resistance is a lack of new products or new technologies.

"Roundup Ready and Liberty Link rice were supposed to be the two products to help confront the resistance problem, but they're considered GMOs and the market won't accept GMOs at this time, so that technology is dead in the water," Scott said. "There's a big gap now in rice in terms of new product development."

To close the gap, Scott, along with Ken Smith, division weed scientist and other division researchers are studying a programmatic approach to killing barnyard grass.

"For years, the program was Propanil followed by Propanil or Newpath followed by Newpath, for example," Scott said. "Now, we're looking at combining Prowl, Facet, then Newpath to attack the problem." This three-product approach, Scott said, gives producers three different modes of action against the weed, and, if there's resistance developing, this approach should kill the weed before it's a full-blown problem.

"We're evaluating all of the products on the market, looking at products in combination with each other and trying to develop affordable weed management practices for producers to prolong the life of these herbicides," said Scott. ■

RESISTANCE GROWS — Barnyard grass has proven tough to kill and farmers have even fewer options to kill herbicide-resistant barnyard grass.

New RREC facility *(cont'd. from page 1)*

received in 1999 from an international trade case settlement, Hillman said.

John Ed Anthony, chairman of the U of A System Board of Trustees, said, "the Division of Agriculture is a key part of the university system" and makes important contributions to the state's economy.

U of A System President B. Alan Sugg said agriculture is "an economic cornerstone in Arkansas" and that its continued success depends on cooperative efforts by farmers, agribusiness, the U.S. Department of Agriculture and the U of A Division of Agriculture.

State Secretary of Agriculture Richard Bell said Arkansas is No. 1 in rice production by a large margin and the state's rice industry needed a strong research program.

"Farmers believe in research" as illustrated by the Rice Research and Promotion Board contribution to the building project, Bell said.

Hillman read a letter from the board, which praised the leadership of Shult, who retired Dec. 31. Shult's 18 years as division vice president for agriculture brought "significant advancements in university research, and the subsequent benefits that farmers receive from those gains in knowledge," the letter said.

Funding included $6 million from the Arkansas Higher Education Technology and Facility Improvement Act, and the balance was from division reserve funds, Shult said. Gov. Mike Beebe was instrumental in obtaining federal funding from the American Recovery and Reinvestment Act for adding two greenhouses and upgrading the waste treatment plant serving the RREC and the USDA Agricultural Research Service's Dale Bumpers National Rice Research Center, which is next door.

The two centers often collaborate, with USDA researchers focusing on molecular biology research, and the U of A center on more conventional research to solve crop management problems with an emphasis on plant breeding to develop improved rice varieties.

The new RREC facilities include an auditorium dubbed the Arkansas Rice Farmers Conference Center, office and laboratory wings, and an adjacent field lab building. Chris Deren, then-RREC director, said the conference center was named to affirm that the RREC and its personnel are dedicated to meeting the needs of rice producers and their communities.

The RREC has 10 resident faculty members and hosts others who conduct field research on some 750 acres of the 1,021-acre campus.

Laboratories are equipped for research in molecular biology of rice, biofuels and other areas such as plant breeding, plant pathology, tissue culture, hybrid breeding, agronomy, soil fertility, entomology, plant physiology and cropping systems. Field labs were designed for handling and preparation of samples from field plots.

The biomass/biofuels program, which had no laboratory, now has a custom-designed laboratory, and the new molecular genetics laboratory will enhance the use of advanced technology to support the conventional rice breeding program.

New laboratories provide for the addition of a hybrid rice breeding program in cooperation with other rice-growing states and expansion of medium-grain and aromatic rice variety development.

Architects for the RREC facilities construction were Witsell, Evans and Rasco of Little Rock. General contractor was May Construction Co. of Little Rock. ■

Howell Medders

LAND GRANT MISSION — Former Vice President for Agriculture Milo Shult says the project reaffirms a statewide commitment to the land grant mission.

Researchers seeking new controls for false smut

by Elizabeth Fortune

False smut started as a small problem in four counties in one corner of the state where it was first spotted in 1997, but it has since spread to every rice-producing county in Arkansas.

False smut is a disease affecting the panicle caused by the fungus Ustilaginoidea virens and survives in the soil or contaminated rice grain as spore balls. The spore balls, or galls, replace the rice kernel.

The galls appear first as silvery white, turn orange as they mature and finally appear dark brown when fully matured. Mature galls release airborne spores appearing as a yellow or orange fog when disturbed. The galls also contaminate harvested rice, resulting in quality concerns as well as the added expense of cleaning to remove them.

SEEKING EFFECTIVE TREATMENTS — False smut has spread in 13 years from four counties to every rice-producing county in Arkansas, making it a control priority.

"The severity of false smut in individual fields has increased over the past decade," said Rick Cartwright, a plant pathologist with the University of Arkansas Division of Agriculture who is now the associate director of agriculture and natural resources.

The disease first caused problems in conventional varieties but has become a problem in hybrid rice, as well. Cartwright said it's difficult to control the disease in the current rice production system so researchers have increased efforts to find new control options or improve existing ones.

Cartwright works with Dr. Chuck Wilson, division rice agronomist, and the division's rice breeders to detect developing rice varieties in different locations to identify lines that are highly susceptible to the disease. Cartwright said he has assessed foliar fungicides for effectiveness in controlling the disease.

David TeBeest, U of A plant pathology university professor, is also working on a research project to discover resistant rice germplasm for breeding purposes and to assess novel seed treatments with potential to control the disease, with or without foliar fungicides. Cartwright noted this research project offers hope for more effective control of this difficult disease. ■

The severity of false smut in individual fields has increased over the past decade, and the disease is difficult to control in the current rice production system.

If there's rice, there's rice blast

by Fred Miller

Rice blast, caused by the fungus Magnaporthe oryzae, is the most destructive disease of rice worldwide, said Jim Correll, University of Arkansas Division of Agriculture plant pathologist.

"Wherever rice is grown, anywhere in the world, you find rice blast," Correll said. "Unchecked, blast can greatly reduce crop yields."

Rick Cartwright, plant pathologist and associate director of agriculture and natural resources for the Division of Agriculture, said the primary weapons against blast are resistant varieties. The problem, he said, is that blast has its own breeding program. "The fungus responds over time by generating new races that overcome the disease resistance in rice," Cartwright said.

For this reason, Correll said, blast research and development of new, resistant varieties is a continuous effort. "The rice blast pathogen is constantly evolving to overcome resistance," he said. "It's an arms race in which we're always looking for ways to develop varieties with blast resistance and high yield."

Cartwright said there are some hybrid rice varieties available that do really well against blast. "But we put them in the areas with the highest blast pressure, usually in areas with favorable environmental conditions for the disease," he said. "The problem is you're putting those hybrids up against a disease that's really good at overcoming resistance."

"If you have to do it, you have to do it," Cartwright said. "But it's participating in risky behavior."

Resistance may be the first line of defense against blast, but division scientists are working on many fronts, Correll said, and they often work in collaboration with USDA Agricultural Research Service scientists at the Dale Bumpers Rice Research Center located next door to the Rice Research and Extension Center near Stuttgart.

Plant pathologists work to understand the pathogen and its interaction with rice and other host plants, as well as environmental influences that inhibit or promote the disease, Correll said.

Correll looks at how resistant rice breeding lines and varieties hold up to existing races of blast. "The better we understand the disease, the better we can develop improved resistance," he said.

Cartwright and plant pathologist Fleet Lee have done a lot of work with foliar fungicides. "They give us a powerful tool for controlling blast," Cartwright said, "but they work best when you get them on the field in front of the disease."

Fred Miller

VIGILANCE — University of Arkansas Division of Agriculture associate director of agriculture and natural resources and plant pathologist Rick Cartwright examines infected plants in a rice blast nursery at the division's Rice Research and Extension Center near Stuttgart.

"We need more research to help us better predict blast," Cartwright said. "If, for example, we find leaf blast, we know to get the fungicide on the necks of the panicle as soon as the rice heads begin to come out. If you wait until the heads and necks are out, you've lost the game.

"We need to monitor it and try to stay on the front end of it," Cartwright said. "As soon as you detect blast, call your county extension office. If you catch it on the front end, we may be able to do something about it."

Cartwright said blast might develop resistance to commonly used fungicides. "There's some anecdotal evidence in Louisiana that this may already be beginning to happen," he said. Growers need to be sure their rice plants are healthy and give the fungicides a chance to work, Cartwright said. "We encourage farmers to be good stewards of these fungicides," he said, "because once they're gone, they're gone."

Correll said crop scientists study rice management strategies, such as timing and duration of flooding or selection of resistant varieties that help growers manage the disease and preserve their yields.

Lee, working with plant physiologists, developed a method of using a deeper flood that reduces oxygen in the root zone, Cartwright said. It induces resistance in the rice and helps keep the disease under control later in the season and keep it off the seed neck.

Cartwright said division scientists have learned it's important to maintain balanced plant nutrition, especially between nitrogen and potassium. Improper balance can result in conditions that weaken the plant or promote growth of the disease. Division scientists are also working on seed treatments that help in fields where blast is consistently present.

The fight against blast is never-ending, Correll said.

"The pathogen will develop resistance to existing fungicides and find ways to overcome the resistance in today's varieties," Correll said. "We have to work constantly to stay ahead of the disease and give farmers the tools they need to get good crops." ■

WORLDWIDE INTEREST — Jaelin Park, left, and Sunghyung Kong, both of Seoul National University, South Korea, take photos of infected rice plants in a rice blast nursery at the University of Arkansas Division of Agriculture Rice Research and Extension Center near Stuttgart.

Tools help farmers with seeding rates

by Elizabeth Fortune

Correct seeding rates may reduce diseases and lodging, maintain optimum plant height and maximize yields while reducing inputs. To help rice farmers plant at the optimum density, the University of Arkansas Division of Agriculture has two computer-based tools available: RICESEED and a rice seed calculator on the division's website, www.uaex.edu, or at the local county extension office.

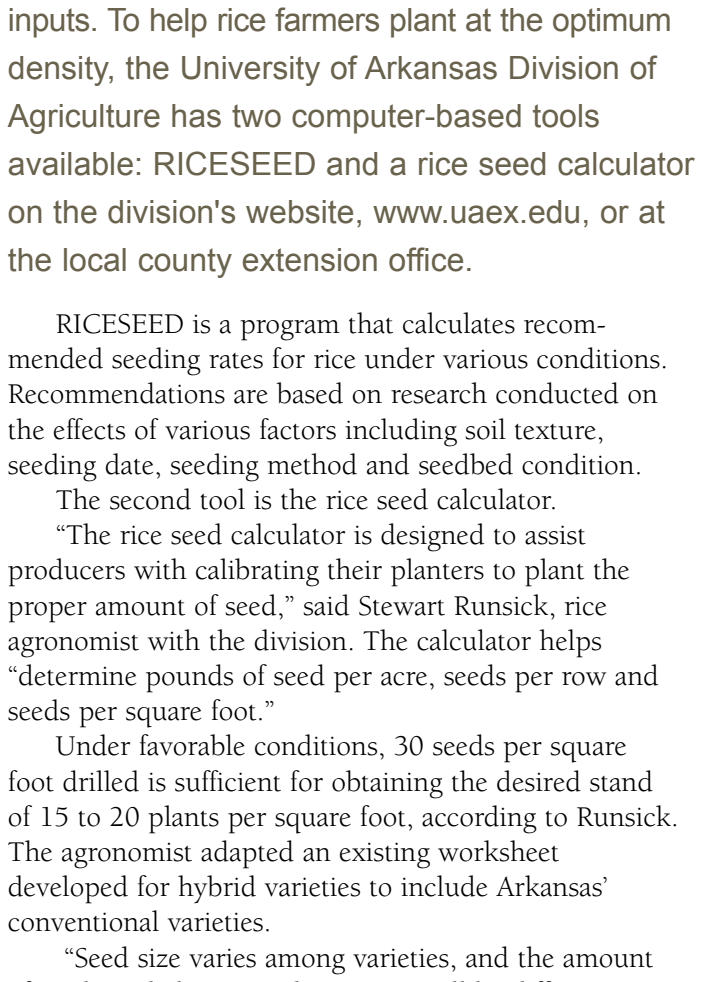
RICESEED is a program that calculates recommended seeding rates for rice under various conditions. Recommendations are based on research conducted on the effects of various factors including soil texture, seeding date, seeding method and seedbed condition.

The second tool is the rice seed calculator.

"The rice seed calculator is designed to assist producers with calibrating their planters to plant the proper amount of seed," said Stewart Runsick, rice agronomist with the division. The calculator helps "determine pounds of seed per acre, seeds per row and seeds per square foot."

Under favorable conditions, 30 seeds per square foot drilled is sufficient for obtaining the desired stand of 15 to 20 plants per square foot, according to Runsick. The agronomist adapted an existing worksheet developed for hybrid varieties to include Arkansas' conventional varieties.

"Seed size varies among varieties, and the amount of seed needed in pounds per acre will be different when trying to achieve 30 seeds per square foot," Runsick said.



ONLINE HELP — The online seeding calculator known as RICESEED can help farmers get maximum productivity from their fields.

A producer needs to know the circumference of the planter drive wheel, seeds per pound of the variety and the row spacing of the planter.

"A producer starts by turning the drive wheel a minimum of 15 times while catching the seed from the seed tubes in at least five rows per section," Runsick said. "The producer then weighs in grams in the caught seed, records the information in the calculator and adjusts the planter to achieve the desired results."

Both RICESEED and the rice seed calculator can be found on the division's website at www.uaex.edu, or at the county extension office. ■

Arkansas Rice Research and Promotion Board

Research Project Allocations 2008-2009

ECOSYSTEMS	
White River Ecosystem	$446,000
Mississippi Delta Ecosystem	$351,000
Grand Prairie Ecosystem	$440,000
Subtotal	$1,237,000
BREEDING AND PHYSIOLOGY	
Rice Breeding and Genetics	$317,000
Rice Breeding and Genetics – Technical Support	$141,000
Breeding and Evaluation for Improved Rice Varieties	$348,000
Hybrid Breeding and Evaluation for Improved Rice Varieties	$90,000
Development of Aromatic Rice Varieties	$25,000
Examination of Resistance Stability to Rice Blast Disease	$37,000
Quality Analysis for Rice Breeding and Genetics	$147,000
Arkansas Rice Performance Trials	$88,000
Subtotal	$1,193,000
VERIFICATION	
Rice Research and Verification Program	$154,000
Subtotal	$154,000
ENVIRONMENT	
Environmental Implication of Pesticides in Rice Production	$50,000
Assessment of the Methane Production Potential and Carbon Footprint of Rice	$40,000
Subtotal	$90,000
POST HARVEST	
Rapid Quality Assessment Tools for Rice Cultivars and Hybrids	$40,000
Subtotal	$40,000
INFORMATIONAL PROGRAMS	
Editing and Publishing the *B.R. Wells Rice Research Studies*	$8,000
Subtotal	$8,000
TOTAL	$2,722,000

Financial Statement

Statement of Revenue, Expenditures and Accumulated Revenue
July 1, 2009 through June 30, 2009

REVENUE:	
Gross Collections	$5,760,917
Beginning Fund Balance	$268,565
Total Available Revenue	$6,029,482
LESS:	
Revenue and Treasury	$172,828
Net Available Revenue	$5,856,654
EXPENDITURES:	
Research/Extension	$2,727,000
Promotion/Market Development	$2,653,568
Producer Communication	$11,306
Rice Foundation	$5,000
Administration	$6,406
Total Expenditures	$5,403,280
TOTAL Accumulated Revenue	$453,374

1 **New RREC facilities 'keep the land grant spirit alive' –** The 34,000-square-foot facility includes labs, offices and a conference center.

2 **Seed treatments control pests, may increase vigor –** Resulting yield increased about 10 bushel per acre in trials.

3 **U of A researchers track Arkansas' rice economy –** Economists give Arkansas growers a profitable edge for rice.

4 **Pests still suspected in the spread of rice disease –** Panicle mite hasn't made inroads to Arkansas rice fields, but a resident pest may be introducing a worrisome disease.

4 **Resistant weeds, lack of new technology are growing problem for producers –** Researchers are studying a programmatic approach to killing barnyard grass.

5 **Researchers seeking new controls for false smut –** The fungus that now appears in every county is difficult to control in the current rice production system.

6 **If there's rice, there's rice blast –** Division scientists maintain vigilance against the most destructive disease in rice worldwide.

7 **Tools help farmers with seeding rates –** Two online programs helps farmers determine the correct rates for maximum productivity.

7 **Research project allocations and financial statement**

8 **Seed of Roy J and two new CL varieties available for 2011 –** High-yielding, long-grain varieties were developed in the breeding program supported by the Arkansas Rice Research and Promotion Board.

Did you know?

A study released in December 2010 by the USA Rice Federation shows that farmers are producing more rice with fewer inputs!

The study — an important first look at the sustainability of rice production — provides a benchmark for the industry. The ongoing challenge for producers will be continuing to produce rice that is both sustainable and profitable to feed a growing global population.

ARKANSAS Rice CHECK-OFF

All publications and other information about the Arkansas Rice Research and Promotion Board programs and activities are available online at **www.arkrice.org**.

Arkansas *rice*

Arkansas Rice Research and Promotion Board
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Seed of Roy J and two new CL varieties available for 2011

by Howell Medders

Seed dealers are offering three new rice varieties for planting in 2011 — Roy J, CL142-AR and CL181-AR — developed in the University of Arkansas Division of Agriculture breeding program supported by the Arkansas Rice Research and Promotion Board. Two other rice varieties, Taggart and Templeton, will be available as certified seed in 2011.

NEW VARIETY — Roy J, a very high-yielding, long-grain variety with exceptional resistance to lodging, is one of three new rice varieties available for planting in 2011. The new varieties are from the University of Arkansas Division of Agriculture breeding program supported by the Arkansas Rice Research and Promotion Board.

The multidisciplinary breeding program is based at the Rice Research and Extension Center (RREC) at Stuttgart and is coordinated by breeders Karen Moldenhauer and James Gibbons.

Roy J is a very high-yielding, long-grain variety with exceptional resistance to lodging. Plants are relatively tall at 41-45 inches, but the straw has proven to be strong. Roy J test plots were able to withstand several high wind and rain events in Arkansas performance tests and the Uniform Regional Rice Nursery (URRN) trials conducted in Arkansas, Louisiana, Mississippi, Missouri and Texas by the USDA Agricultural Research Service and state breeding programs.

Yields of Roy J have ranked among the highest among varieties currently grown in Arkansas, including Taggart, Francis, Wells, Cybonnet, Cocodrie and Drew. Milling yields of Roy J, with a mean of 58-70 over three years in the state trials, were also comparable to the varieties currently grown in Arkansas. Roy J was similar to the widely planted Francis, Wells and LaGrue varieties in disease resistance or susceptibility in state and regional trials.

Two new Clearfield varieties, CL142-AR and CL181-AR, were developed in cooperation with Dr. Tim Croughan, retired professor from the Louisiana State University Rice Station at Crowley.

CL142-AR is a high-yielding, long-grain Clearfield variety with average milling yield, susceptibility to blast and moderate susceptibility to sheath blight and straighthead, based on test results. Maturity of CL142-AR is similar to Wells and CL161, it has a plant height similar to LaGrue, and lodging is similar to Francis. The kernel size of CL142-AR is similar to Taggart.

CL181-AR is a high-yielding, long-grain Clearfield variety with good milling yield. It is a semi-dwarf plant that is susceptible to blast, very susceptible to sheath blight and moderately susceptible to straighthead. Lodging is similar to Cocodrie. The kernel size of CL181-AR is similar to Wells.

The rice breeding program uses parent material from the U.S. breeding programs, the USDA World Collection and international centers. Crosses are made each year to incorporate genes for higher grain yield, broad-based disease resistance, improved plant type (i.e., short stature, earliness, erect leaves), superior quality and nitrogen fertilizer use efficiency into well-adapted lines.

A winter nursery in Puerto Rico is used to accelerate head row and breeder's seed increases of promising lines and to advance early-generation selections. The program uses all feasible breeding techniques including hybridization, backcrossing, mutation breeding and biotechnology.

Marker-assisted selection is used to streamline the selection process for the Pi-ta gene for blast resistance and for cooking quality traits. The breeding program is a dynamic team effort involving breeders, geneticists, molecular geneticists, pathologists, soil scientists, physiologists, entomologists, economists, system agronomists, weed scientists, cereal chemists and extension specialists.

"We are always looking for ways to help producers increase yields and quality and lower production costs," Moldenhauer said. "We encourage input from producers, industry and consumers." ■