January 2009

Arkansas Rice Research and Promotion Board

ARKANSAS Rice CHECK-OFF

Arkansas rice

At a Glance

REALITY CHECK — Arkansas rice farmers are painfully reminded on occasion about the weather and its affect on diseases. Dr. Rick Cartwright, U of A Division of Agriculture pathologist, said farmers might go "five years without a problem, then get wiped out by a disease." That was true in 2008 when late planting and late-season weather issues favored development of smut diseases. "Management practices help most years, but we don't have good resistant varieties yet." He said the USDA is looking for better varieties, and the U of A is working to fine-tune management practices to control the diseases.

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WEAK STEMS — Stem rot of rice is an old disease that became a serious issue for farmers in 2008. It causes blank heads, yield losses and weakened stems. "When you have a hurricane blow through, you realize how much of a problem you have," said Dr. Rick Cartwright, U of A Division of Agriculture pathologist. "Winds will lay a crop down that has weakened stems," he said. "We have had the disease under control in the past with fertilizers, especially potash, but fertilizer costs are so high these days many farmers can't afford to replace lost fertility. How can farmers make a profit with these high fertility costs?"

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RECORD YIELDS — The Rice Research Verification Program (RRVP) has been a successful educational program for the past 25 years. Since 1983, the RRVP has been conducted on 274 commercial rice fields in 33 rice-producing counties in Arkansas on nearly 16,000 acres. On average, RRVP fields have yielded 12 percent higher than the Arkansas state average. In 2007, the RRVP recorded the highest yields in the history of the program with an average of 189 bushels per acre. Producers enrolled in the promotion board program have been able to increase yields and gain valuable knowledge of rice production practices.

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IRRIGATION METHODS — The latest results of an annual survey of rice growers (2007) shows that 31% were using multiple-inlet, poly-tubing irrigation, which is up from 17% in 2002. Furrow-irrigation, which works best in fields with relatively steep slopes, was used on about 8,000 acres, compared to 1,000 in 2002. About 45% of the 2007 rice acreage was precision leveled in 2007, including more than 5% as zero-grade fields.

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MANAGING STUBBLE — Stubble management systems used, as reported in the 2007 survey of Arkansas growers, included tillage on 30% of the acreage, burning on 23%, rolling on 30% and winter flooding on 22%. The total is more than 100% because combinations of systems are often used. About 55% of the acreage was planted using conventional tillage methods. The most common conservation tillage method was stale seedbed planting following fall tillage, which was practiced on about 30% of the acreage. No-till methods were used on about 9% of the acreage.

Researchers say potassium is key to stem rot control

by Fred Miller

Potassium may not be the first nutrient growers think about when fertilizer is on their minds, but it performs many important functions, including fortification against disease.

"When plants are potassium deficient, they are more susceptible to disease," said Nathan Slaton, director of soil testing for the University of Arkansas Division of Agriculture. "When disease is present and the environment is favorable for the disease, it's more likely you will suffer significant losses if there is insufficient potassium."

Rick Cartwright

FUNGUS ATTACK — The survival structure of the stem rot fungus resembles grains of pepper that float up in flood water and drift around until they come in contact with rice sheaths. They then attach and begin to move through the sheath toward the hollow stem, where they can kill the stalk.

Slaton said it has long been known that there is an association between potassium and stem rot. "Quite often, when you see very severe stem rot," he said, "it raises a red flag to check potassium levels."

Rick Cartwright, interim head of the division's plant pathology department, said a fungus that is highly adapted to the rice plant causes stem rot. It persists in the soil and its survival structures look like grains of pepper.

"It's very survival-oriented," Cartwright said. "It can survive at least six years in the soil without a host."

Cartwright said that when a rice field is flooded, the fungus floats to the surface and, when it comes into contact with the plant, it attaches to the sheath and begins to work its way into the stem. Once it reaches the hollow center of the stem, the stem dies.

"It's often a late-season disease that hits just about the time the heads emerge," Cartwright said.

Slaton said that too much nitrogen could make a plant susceptible to stem rot even if it has sufficient potassium. "There are two questions you want to ask up front, if you're having trouble with stem rot," he said. "Is there sufficient potassium? And, is there too much nitrogen?"

Since 2000, Slaton has been applying varying rates of potassium in rice test plots at the Pine Tree Experiment Station near Colt for a fertility study. "It was an ideal set up for a disease study," Slaton said. Cartwright began collecting samples of mature plants from those plots and evaluating them for stem rot.

After six years in the study, supported by the Arkansas Rice Research and Promotion Board,

(cont'd. on page 3)

"When you see very severe stem rot, it raises a red flag to check potassium levels."

From the chairman

Dear Arkansas Rice Producer,

Jerry Hoskyn, Chairman, Arkansas Rice Research and Promotion Board

It was another challenging year for us, Arkansas' rice farmers. While production costs soared, our crop was 2-3 weeks late due to a wet spring. Higher rice prices did little to ease our minds. That is why it is critical that our checkoff dollars be invested wisely. Together, we can improve productivity and profitability by funding research.

Over the years I have studied the research and know first-hand the value of public research. This is why the Arkansas Rice Research and Promotion Board continues to invest check-off funds in the University of Arkansas rice research programs.

This year, the Board also voted to invest up to $2.3 million of Arkansas' remaining TRQ funds in the university's new Rice Research and Extension Center in Stuttgart. We felt it critical that we have state-of-the-art public research facilities here in the nation's largest rice-producing state.

The Arkansas Rice and Research Promotion Board publishes Arkansas Rice to show how your checkoff dollars are being invested. The Board takes its responsibility very seriously and strives to design a program to benefit all rice farmers in Arkansas. We welcome your feedback and look forward to hearing your comments regarding the program.

Sincerely,

Jerry Hoskyn, Chairman
Arkansas Rice Research and Promotion Board

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Fertilizer rate: maximum yields or maximum profits?

by Lamar James

The optimal nitrogen fertilizer rate for the highest yields may not always be the optimal fertilizer rate for the highest profits. New research at the U of A Rice Research and Extension Center is hoping to discover if the latter is true.

Brad Watkins, Division economist, and Jeffrey Hignight, program associate, are analyzing data on hand from years of research on fertilizer costs and yields to determine what makes optimal profits.

Farmers tend to focus on getting the highest yields, but sometimes a lower fertilizer rate may pay off with higher profits. Research was spurred by the soaring cost of fertilizer, according to Watkins. "We'll take the yield work that's been done and apply economics to it," he says.

Hignight says he and Watkins will use the university's nitrogen fertility research and yield trials on various plots over the years. "Nitrogen rates may vary for maximum yield and maximum economic return based on location, soil type and variety," he says. "Even the timing of applications can affect the outcome. Usually, the optimum nitrogen rates to produce the highest yields and highest profits will be fairly close, but they may have a larger difference in some cases."

Watkins says there is considerable data on what amount of fertilizer results in maximum yields. "When you look at the amount of nitrogen it takes to produce maximum profits, it is usually less than the amount that produces maximum yields," he says. High crop prices also affect the data. Although the price of nitrogen has increased, so has the price received by farmers per bushel of rice.

Suzanne Patterson

PROFIT SLEUTHS — Division economist Brad Watkins and program associate Jeffery Hignight are looking for optimal profits for farmers by pouring over years of data on fertilizer results. The research, which indicates maximum yield may not always equal maximum profit, was spurred by the soaring cost of fertilizer.

Over the previous 10 years, the relationship between rice price received and nitrogen costs has been fairly stable.

"We'll look at the data and try to get a good handle on the economics of matching nitrogen fertilizer to crop yields and highest profit," he says. "We may not find any results too different that would change the way we're doing things now," he warns, "but it's worth the effort. We can certainly look at data about the different ways of applying fertilizer and see what might be best for the farmer and what might work best for different varieties.

"Hopefully we'll have something out there that will help farmers in time for the 2009 season," Watkins says. The work is funded by the Arkansas Rice Research and Promotion Board. ■

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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Monitoring for pesticide residues

by Fred Miller

Seven years of monitoring four east Arkansas rivers for pesticide compounds have revealed no problematic trends, said John Mattice, chemist for the University of Arkansas Division of Agriculture.

"Although we find low levels of some pesticides, we have not found concentrations or trends that lead us to think that an environmental problem is developing," Mattice said.

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FISHING EXPEDITION — (left) Research associate Briggs Skulman collects water samples every two weeks and places them into a mobile field extractor (right) that will extract pesticide compounds from the water while he drives to the next sampling site. The collections are made from the L'Anguille, Cache, St. Francis and Lagrue rivers in northeast Arkansas from late April through early August, the peak months for pesticide applications.

With support from the Arkansas Rice Research and Promotion Board, Mattice and program associate Briggs Skulman have analyzed water samples from the L'Anguille, Cache, St. Francis and Lagrue rivers to determine if pesticide compounds from rice fields were building to toxic levels. Mattice has been testing the state's rivers for several years and sampling began in these four rivers in 2002.

"If any problems develop, we want to catch them early," Mattice said.

They screen the samples for 10 to 12 compounds, mostly for herbicides used primarily in rice, Mattice said. The number and specific compounds change as growers stop using older products or begin to use new products.

"We're looking for the compounds that we have a reasonable chance of finding," Mattice said.

Skulman collects the samples every two weeks from late April through early August, the peak months for use of the pesticides. There are four collection sites on each of the four rivers. Any compounds captured are extracted from the river water in a mobile field extractor, designed and built to operate while Skulman drives from one collection site to the next.

The extracted samples are analyzed in a Division of Agriculture lab in Fayetteville. Only concentrations detected at 2 parts per billion or higher are used for data analysis, Mattice said.

In particular, Mattice said, they are looking to see if concentrations of pesticide are increasing, especially from one year to the next. They also want to know if a higher percentage of samples are showing concentrations of more than the threshold of 2 parts per billion.

They are also looking to see if more samples have multiple compounds or whether any compound maintains a constant concentration in consecutive samples from the same site. They also note the compounds with the highest concentrations each year.

"Now, we have enough data to detect any potential trends," Mattice said.

Most samples contain low amounts of one or two pesticides and seldom contain all of the compounds for which Mattice tests. "The frequency of detection varies between 3.2 to 6.3 percent, where 100 percent would be detecting every compound in every sample," he said.

Detections are highest in May through July and peak in June, Mattice said.

Mattice said the concentrations in the monitored Arkansas rivers are below the levels reported to be toxic by the Environmental Protection Agency. "The levels we're finding for these compounds do not seem to be causing environmental problems," he said. "And they are not trending upward toward toxic levels."

The highest levels detected have usually been in the Cache River, which had 40 percent to 46 percent of detections for five years between 2002 and 2006, Mattice said. In 2007, the Cache had 33 percent of detections.

The pesticide compounds clomazone and quinclorac, known under the trade names Command and Facet, are detected most often, accounting for 55 percent to 96 percent of detections at 2 parts per billion or higher each year. They were often detected on consecutive sampling dates, Mattice said, indicating they may remain above that detection threshold over extended periods of time, although the concentrations are normally low.

One question Mattice wanted to answer was whether the compounds are diluted as they travel downstream. To answer it, concentrations are compared at the four collection sites on each river.

"What we found in the samples as we moved downstream, was that we saw higher percentages of lower concentrations and lower percentages of higher concentrations," Mattice said. "This supports the idea that pesticides are diluted as they move downstream." ■

"If any problems develop, we want to catch them early." — John Mattice, UA Division chemist

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TEACHING FERTILITY — Nathan Slaton, associate professor of soil fertility, describes soil fertility research for rice during a field day July 24 at the Rohwer Research Station. Insufficient potassium or excess nitrogen can increase susceptibility of rice to stem rot.

Stem rot

(cont'd. from page 1)

Slaton said the lowest levels of stem rot were found in the plots with the highest application rates of potassium, and the highest rates of stem rot were in the plots with the lowest rates of potassium. The results also clearly indicate that stem rot can build up over time.

"This tells us that long-term mismanagement of potassium can end up costing growers in terms of losses to stem rot," Slaton said.

Graduate student Elliot Maschmann expanded the study in 2007, adding test plots in Lonoke and Poinsett counties, and more sites in 2008 in Poinsett and Prairie counties.

In addition to application rates, Maschmann is looking at application timing.

"In 2007, we saw that potassium applied before flooding worked best," Maschmann said. "And as application rate increased, yields improved. As rates decreased, stem rot increased in severity."

Slaton and Cartwright also want to know if late applications of potassium can reverse high levels of stem rot during a growing season. Cartwright is using some plots in farmers' fields to try to answer that question.

"In 2007, we saw an indication that there can be benefits to late-season applications of potassium," Slaton said. "Results from 2008 will give us a better indication."

Cartwright said the fungicide Quadris has some effect on stem rot and may help control the disease until soil fertility is balanced. Fungicide studies are still underway, and it appears that the economic return from a fungicide alone can be questionable with this disease under some circumstances.

"Farmers who follow Division of Agriculture recommendations for potassium and nitrogen don't have too much trouble with stem rot," Cartwright said. ■

Rice cutgrass creeping into Arkansas rice fields, UA says

by Fred Miller

Rice cutgrass is slowly crawling out of the ditches and into rice fields throughout the Delta, said Jason Norsworthy, weed scientist for the University of Arkansas Division of Agriculture.

"This is a plant that is most common in ditch banks in the Delta," Norsworthy said. "I see it essentially everywhere I go."

Named for its hard, sharp leaves, cutgrass is a slow-growing, slow-moving plant, Norsworthy said. It thrives in ditches because there's plenty of water and the ditches aren't tilled.

Rice cutgrass is a perennial weed, but not a major seed producer, Norsworthy said. "Most often, by the time rice is mature and harvested, cutgrass has not yet produced seed." Instead, rice cutgrass most often spreads through rhizomes, horizontal stems that spread out underground and send out

Fred Miller

WEED RESEARCHER – Weed scientist Jason Norsworthy conducts research on weeds that infest rice fields.

roots and new shoots. Norsworthy said this is why it tends to spread into fields from the edges.

"Tillage is the major means of control," Norsworthy said. "But over the last five to 10 years, the intensity of tillage in rice fields has been reduced, and that probably contributes to it moving into those fields."

Norsworthy said most herbicides used in rice do not control cutgrass very well. "So, you're taking out every other weed in the field except rice cutgrass," he said.

In fields planted with Clearfield rice, Newpath herbicide does control rice cutgrass well with two applications, Norsworthy said. In fields with other rice varieties, the herbicide Regiment will provide about 60 percent control.

"Fields where crops are not rotated are especially vulnerable," Norsworthy said. "If rice is rotated with other crops, especially soybeans, many grass herbicides can control it. This is especially true for glyphosate herbicides, which provide excellent control."

He added that cultural practices, especially tillage, are effective at controlling rice cutgrass. Tilling breaks up the soil and the plant's rhizomes, cutting them up and bringing them to the surface, where they dry out and die in short order.

"They're not very hardy," Norsworthy said. ■

Rice cutgrass most often spreads through rhizomes, horizontal stems that spread out underground, which is why it tends to spread into fields from the edges.

Could seed treatment be effective on No. 1 rice pest?

by Lamar James

Gary Hardke, a Hazen farmer, hates pests, especially grape colaspis, which have plagued him for a long time.

"It's been a problem for me forever," he said. "When we were growing corn, we didn't have this problem."

Lamar James

TINY CULPRIT – Grape colaspis, or lespedeza worm, may be tiny, but he's a big threat to Arkansas rice. U of A researchers are looking for a better way of controlling them.

Since the loss of Icon pesticide to control grape colaspis, often called lespedeza worm, farmers have had few options. Meanwhile, U of A Division of Agriculture scientists have been trying to develop an effective alternative.

The research is centered on seed treatments. One seed treatment, Dermacor, received an EPA Section 18 exemption for use on 20,000 acres in Arkansas in 2008, allowing scientists the opportunity to evaluate the product on large acreage.

"We weren't totally pleased with what we saw with Demacor. Insect population levels were extremely high in 2008, and fields with Dermacor treated seed had damage from grape colaspis," said Dr. Gus Lorenz, extension entomologist. "We hope one of the two other chemicals, thiamethoxam (the active ingredient in Cruiser) and clothianidan will provide better control. Our studies in 2009 will include all of the treatments again for evaluation. The research is funded by the Arkansas Rice Research and Promotion Board.

"We're also looking at some foliar-applied products. We hope to get an EPA Section 18 exemption to study thiamethoxam and clothianidan on limited acreage in 2009." None of these products, except Dermacor, are based on new chemistry, he said.

Grape colaspis, the No. 1 pest in Arkansas' rice crop, is a difficult pest to study, Lorenz said, because it's not a persistent problem. "Growers never know from year to year if they're going to have a problem, and it's hard for us to get data on the pest because we don't know where it's going to show up."

Lorenz said the U of A tested Dermacor, a broad-spectrum pesticide, by applying it on plots in cooperating farmers' fields at several locations.
The initial studies indicated that while Dermacor excels for rice water weevil control, it has limited effectiveness as a seed treatment for grape colaspis. However, it produced an unexpected plant health benefit.

"This product has some vigor associated with it," Lorenz said. In one case, a farmer reported that Dermacor produced a stand four days faster than untreated fields, and the stand was fuller.

Grape colaspis can wreck a rice stand under certain conditions that include cool, wet weather, where rice growth slows down. Icon, the old standard for control, was a new chemistry that was effective in controlling water weevil and grape colaspis. However, Icon was withdrawn from the market because of environmental concerns.

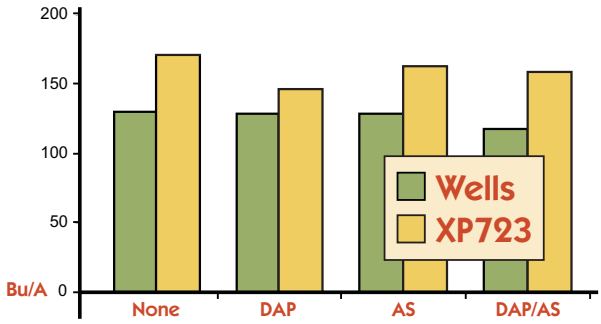
Meanwhile, farmers have been raising recommended seed planting rates from 70 to 75 pounds per acre to 120 pounds per acre to deal with grape colaspis and other pests that were controlled by Icon. ■

Bouncing back from glyphosate injury

by Lamar James

The University of Arkansas Division of Agriculture has traditionally recommended DAP or ammonium sulfate fertilizer to help rice injured by glyphosate or Roundup drift.

The Division gets telephone calls every spring from rice farmers worried about glyphosate herbicide injury to their crop from airborne drift caused by spraying of other crops on a neighboring farm.



Rice Yield (Effect of fertilizers following 4.4 oz/A)

Data from Lonoke, AR 2007

"We've always recommended fertilizer and a flush because we felt like the fertilizer and a flush of water would encourage it to grow," said Dr. Chuck Wilson, extension rice specialist for the University of Arkansas Division of Agriculture.

But now, in light of high fertilizer prices, they're going to the field to test that recommendation. The results last year surprised them.

"Last year, we didn't see a significant improvement from those fertilizers at test locations at Lonoke and in Poinsett County. It didn't economically pay for itself. So we're asking ourselves, 'Do we need the fertilizer to help in recovery?'"

DRIFT DAMAGE – Early glyphosate drift symptoms on rice include stunting, yellowing and delayed growth.

That brings up another question. In the past, after farmers applied fertilizer and flushed their rice to help their crop recover from glyphosate drift, the crop seemed to bounce back faster. "The question is was it the fertilizer or was it going to recover without it anyway?"

Wilson said he and Dr. Bob Scott, extension weed scientist, are cooperating with Mississippi State University on the two-year study, which is funded by the Arkansas Rice Research and Promotion Board.

Scott said results of the study will be made available to rice farmers.

He said the 2007 results didn't satisfy them. "We didn't understand why we didn't see an improvement after fertilizing and flushing the crop. With all the weather changes in 2008, results are expected to be very variable." The data for the two years will be made available to farmers in 2009.

There's a lot at stake. "One of the biggest costs for farmers is an increase in weed control since it takes you longer to get a flood up because the rice won't tolerate it until it recovers from the injury," says Scott.

Scott says, "No research has ever been done to confirm the recommendation that evolved in a field situation. Visual observations of the fields in the past indicates the rice looked greener and seemed to perk up a little faster if you apply fertilizer, but we didn't have data to back it up. Low and behold, the data in 2007 didn't support this.

"If we see the same results as we did in 2007, then we'll start to believe that we should stop recommending fertilizer and a flush and that a normal fertilizer program is fine, even on damaged rice." ■

Two rice lines on track for breeders seed

by Howell Medders

Two new long-grain varieties are on track for release to seed growers in 2009 from the University of Arkansas System Division of Agriculture's rice breeding program, which is supported by the Arkansas Rice Research and Promotion Board.

Drs. Karen Moldenhauer and James Gibbons at the Division's Rice Research and Extension Center (RREC) near Stuttgart direct the breeding program, which has been a major factor in rice yield increases that have averaged 2 bu/acre per year over the past 20 years.

Maurice Blocker

COMING SOON — Rice breeder Karen Moldenhauer is pictured in a breeder seed plot of RU0401182. The breeding line, being considered for a new cultivar release, is high-yielding and has excellent blast resistance and milling yields.

Moldenhauer said the 1182 breeding line, which is being considered for release to seed growers, has the high-yield potential of Wells and Francis and enhanced blast disease resistance. It has the major gene, Pi-ta, which confers resistance to the common races of rice blast disease in Arkansas, and minor genes for moderate resistance to the race IE-1k. This line had an average yield of 197 bu/acre in the Arkansas Rice Performance Trials (ARPT) in 2005-2007, compared to 202 for Francis and 197 for Wells. Milling yields are better than Wells.

The major races of the blast fungus in Arkansas are currently IB-49 and IC-17. The race IE-1k was isolated from fields of Banks rice in 2004 and 2005 and has the potential to be a problem for growers, Moldenhauer said.

The 1188 line, also being considered for release to seed growers in 2009, has the longer and larger kernel size desired by the industry. It has high yield potential, with an average yield of 198 bu/acre for 2006-2007 in the Arkansas Rice Performance Trials.

CL 171-AR, which was available as certified seed for the first time in 2008, has performed well in the Clearfield system for red rice control. Evaluation continues on other breeding lines resulting from cooperative work with Dr. Tim Croughan, retired professor from the Louisiana State University Rice Station at Crowley. Two Clearfield breeding lines with very good yield potential in preliminary tests advanced to the head row stage in 2008 for further evaluation for potential increase as breeder seed.

Head rows of the long-grain line 81076 were grown in 2008 for further evaluation after yielding 215 bu/acre in the 2007 ARPT compared to Wells and Francis, which each yielded 185 bu/acre.

Another breeding goal is to develop new early maturing, short-season lines. Breeding lines with maturities of 100 to 110 days and blast resistance are in the Stuttgart Initial Trials at RREC. They are from the cross RU9101001 / 'Raminade Strain 3'. Raminade Strain 3 has resistance to all of the southern U.S. blast races. Other crosses are also being made to further improve blast resistance in Arkansas varieties.

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, improve 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 breeders 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.

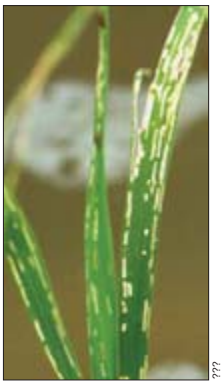
"We are always looking for ways to help producers increase yields and quality and lower production costs," Moldenhauer said. "We encourage input from producers, industry and consumers." ■

Shallow flood level helps manage rice water weevil

by Fred Miller

A shallow flood in rice fields offers farmers another means of managing rice water weevil, according to research by the University of Arkansas System's Division of Agriculture.

With production costs rising, rice farmers wanted to know if agricultural practices could reduce rice water weevil infestations, said Dr. John Bernhardt, an entomologist at the Division of Agriculture's Rice Research and Extension Center (RREC) near Stuttgart.



PEST MANAGEMENT — U of A research shows shallow flooding helps control water weevil.

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"Most years, rice water weevils are our number three pest," Bernhardt said. "They're in every rice field in Arkansas and some farmers have a real problem with it."

Most farmers know which of their fields will have weevil problems, Bernhardt said. They were looking for a practice that could reduce costly insecticide treatments.

Bernhardt said that rice water weevils are attracted to rice fields at the onset of permanent flood. Previous studies had shown that adult weevils lay eggs in plants of all ages, but the highest densities of larvae were found in areas with a deep flood.

Researchers established test plots at RREC in which the natural infestation of rice water weevils was monitored and the impact on yields measured. The plots had variable flood depths maintained for different lengths of time. No insecticide treatments were used. At three and four weeks after permanent flood, the plots were sampled for rice water weevil larvae.

In his study, Bernhardt said plots with a 4-inch flood had the highest density of rice water weevil larvae. Rice plots with a 2-inch permanent flood or a 2-inch flood for four weeks before being raised to 4 inches had significantly fewer larvae. All treatments yielded similar amounts of rough rice, he said. No blast disease – a concern for reduced flood levels – was noted in any of the plots.

"Larvae populations in these fields were reduced about 30 percent in last year's tests and about 28 percent this year," Bernhardt said.

"Reduced flood level is not a substitute for chemical control, but, for some people, it can reduce water use and maybe keep weevil populations below the threshold where they will need chemical insecticide," Bernhardt said.

Bernhardt said he has also conducted tests in which flood was delayed, and this practice gave some control over rice water weevil populations.

"We think a combination of these two practices will offer significant help in managing rice water weevils," Bernhardt said. ■

Rice center all about putting money into farmers' pockets

by Lamar James

Ronnie Bauman, who raises rice and soybeans near Stuttgart, picked up some ideas at the U of A Rice Research and Extension Center's annual field day in 2008 that he thinks will put money in his pocket.

"We went to see what we were spending our money on," he says. He wasn't disappointed. "I enjoyed looking at the experiments and new technology. The new varieties coming out, the weed research and fertility experiments were real interesting. With the high price of fertilizers, I wanted to learn more about it."

Based on what he saw and heard at the field day, "I think we overfertilized this year." He learned ways to save money in 2009 and get maximum yields.

Bauman saw new varieties at the center that will fit into his program. He'd rather grow Arkansas-developed varieties rather than those developed at LSU.

Stephen Hoskyn, another Arkansas County farmer, went to see the latest technologies and "try to find an edge in production. If I can pick up a bushel per acre or save a dollar, it was worth my time."

Lamar James

STRAIGHT TALK – Rice farmers learn the latest research and technology from speakers at the annual rice field day at the U of A rice center in Stuttgart.

Hoskyn has been going to field days since he was a college. His dad, Jerry Hoskyn, also attends field days and is chairman of the Arkansas Rice Research and Promotion Board, which funds many experiments at the center.

The rice field day may well be the most popular event the U of A Division of Agriculture sponsors all year.

The big draw is a chance to see the latest U of A research in one place. A traditional lunch of the tastiest catfish this side of the Mississippi River doesn't hurt, admits Dr. Chris Deren, center director.

Nearly 600 people showed up in 2008. They toured the 1,000-acre facility in buses and on hay bale-laden trailers pulled by pickups and tractors. Every tour was filled.

Tours were followed by talks updating farmers on important issues and a traditional catfish lunch, which the Yoder Ruritan served to hungry farmers, farm consultants, foreign visitors and university personnel.

UA file photo

MAJOR FACILITY – Research plots surround U of A Rice Research and Extension Center buildings on the sprawling 1,000-acre facility near Stuttgart.

It's all part of a rich tradition that has been going on longer than anyone can remember.

"We mainly use it to showcase rice and soybean research at the center," says Deren. "A wide variety of research projects that impact every rice farmer are underway."

Research projects help farmers fine-tune operations and reduce costs. But a major reason the center is critical to Arkansas rice farmers is the development of new, high-yielding, disease-resistant varieties adapted to Arkansas conditions.

"The breeding program has been a very strong focus of this center since it opened in 1927. Farmers always want to know what variety is coming out next.

"We know farmers get their information from many different sources, including the Internet and private consultants, as well as extension specialists and county agents who make unbiased recommendations based on university research," says Deren.

In 2008, the center expanded the audience to young people by offering wildlife and ATV safety courses.

A new feature in 2008, Deren said, was a presentation showing farmers how they could create their own biofuel on the farm.

"Some of the interesting visitors we get every year include a group or two from foreign destinations, including South America and China. We also get visitors from the rice research locations in other states," says Deren.

The center gets a lot of requests from scientists for space. In 2007 the center had about two dozen scientists working on more than 200 separate tests.

The center is in the midst of a major expansion. The older facilities are getting a major upgrade with an infusion of about $11.5 million to create new offices, an auditorium and research space for faculty now scattered in several small buildings.

Bauman says he's glad to see the center update its "antique facilities." ■

ARRPB funds research on quality and functionality

by Howell Medders

Meeting the needs of end-users is critical to the marketability of Arkansas rice. That's why the Arkansas Rice Research and Promotion Board is funding research on the quality and functional traits of rice varieties and potential future varieties.

"We are also looking at environmental effects in different ecosystems," said Dr. Jean Meullenet. He and Dr. Terry Siebenmorgen are project leaders for the University of Arkansas System's Division of Agriculture. They are working with the Riceland Foods quality analysis and research team directed by Dr. Don McCaskill in Stuttgart.

"We have two points of emphasis," Meullenet said. "One is to provide a database of quality and functionality traits for each cultivar under various environmental conditions. The other is to increase efficiency of quality analysis using near infrared spectroscopy (NIRS)."

The quality database and rapid analysis will serve three purposes, Meullenet said. One is to help millers meet their customers' needs. The second is to help rice breeders screen breeding lines for quality traits at an early stage. The third is to help researchers determine best management practices for each variety to realize its quality potential.

A database is being developed that will help millers meet customers' needs, breeders screen for quality traits and researchers determine best management practices.

Traits that are important to millers and end-users include physical measurements such as length, width and thickness, head rice yield and whiteness. Also important are amylose, amino acids, protein, lipids, degree of starch gelatinization, fat acidity, cooked rice texture, moisture content and more.

A near infrared spectroscope can be calibrated to read the spectrum of light reflected or absorbed by a rice kernel to develop a profile of specific quality traits. Developing the system requires calibrating the equipment based on known values for samples already tested by conventional methods, Meullenet said.

Using non-destructive NIRS methods to analyze rice quality will provide data on multiple quality traits in seconds compared to hours using current methods, Meullenet said. This will allow millers and researchers to analyze many more samples than is currently feasible, at a much lower cost. ■

Fred Miller

NIRS – Researchers are developing a system based on near infrared spectrometry (NIRS) to provide data on multiple rice quality traits in seconds compared to hours using current methods.

Arkansas Rice Research & Promotion Board
Research Project Allocations 2007-2008

ECOSYSTEMS	
White River Ecosystem	$387,601
Mississippi Delta Ecosystem	$338,342
Grand Prairie Ecosystem	$487,054
Subtotal	$1,212,997
BREEDING AND PHYSIOLOGY	
Rice Breeding and Genetics	$307,842
Rice Breeding and Genetics - Technical Support	$140,909
Breeding and Evaluation for Improved Rice Varieties	$337,858
Discovery, Definition and Utilization of Resistance Genes for Arkansas Rice Disease Control	$148,037
Race Identification, Genetic Characterization and Screening for Resistance	$23,347
Examination of Resistance Stability to Rice Blast Disease	$47,199
Quality Analysis for Rice Breeding and Genetics	$141,525
Subtotal	$1,146,717
VERIFICATION	
Rice Research and Verification Program	$144,386
Subtotal	$144,386
ENVIRONMENT	
Environmental Implication of Pesticides in Rice Production	$56,973
Subtotal	$56,973
INFORMATIONAL PROGRAMS	
Editing and Publishing the *B.R. Wells Rice Research Studies*	$6,270
Subtotal	$6,270
TOTAL	$2,567,343

Financial statement

Statement of Revenue, Expenditures and Accumulated Revenue
July 1, 2007 through June 30, 2008

REVENUE:	
Gross Collections	$5,825,074
Beginning Fund Balance	$318,669
Total Available Revenue	$6,143,743
LESS:	
Revenue and Treasury	$174,752
Net Available Revenue	$5,968,991
EXPENDITURES:	
Research/Extension	$2,815,112
Promotion/Market Development	$2,567,343
Producer Communication	$10,465
Rice Foundation	$2,500
Administration	$5,806
Total Expenditures	$5,401,226
TOTAL Available Revenue	$567,765

When it's all on the line, help is just a call away

by Lamar James

RALPH MAZZANTI — Division rice research verification coordinator for south Arkansas

The name Mazzanti is well known around Lake Village. Brothers Jerry and Geno Mazzanti played football for the University of Arkansas and went on to play pro football.

Their nephew, Ralph Mazzanti, chose a different field to work. Growing up, Ralph enjoyed working with his brother, John "Buggs" Mazzanti Jr., and another uncle, Tony Mazzanti, on the family farm at Lake Village. He decided agriculture was for him.

The University of Arkansas – although not the Razorbacks – ended up with another Mazzanti when Ralph was hired in August 2007 to replace Jeff Branson as a Division of Agriculture rice research and verification coordinator.

Dr. Chuck Wilson, extension rice specialist for the U of A Division of Agriculture, is pleased with the selection. "We're happy to have him on board and fortunate that he brings a wealth of agricultural experience to the university," he said.

Ralph's journey to the university was a winding path. He attended Arkansas State University for two years and then the University of Arkansas at Monticello for another two years, graduating with a degree in agriculture.

He worked for Helena Chemical Co. for 15 years, managing sales at the Pine Bluff store for Jefferson and Lincoln counties. That was followed by four years with Missouri Farmers Association/Cache River Valley Seed and a year in sales at J.A. Riggs Caterpillar in Little Rock.

His current job suits him just fine, he says. He is responsible for 10 verification fields south of Interstate 40 in Lee, Prairie, Lonoke, Jefferson, Arkansas, Lincoln, Drew, Ashley and Clark counties. Co-coordinator Stewart Runsick is responsible for the fields north of I-40.

"I'll travel 300 miles some days," Mazzanti says. "I stay busy making visits to two to three counties a day every week. I work with the county extension agents to collect data, scout fields and maintain regular contact with producers."

The weekly visits are critical, he says, to help monitor plant growth and determine what cultural practices need to be used when and to monitor pest management.

His favorite part of the job is putting money into farmers' pockets. "We do it by increasing yields and reducing expenses. Yields can be increased by better timing of application of fertilizers, pesticides and water," he says. "Choosing the right seed varieties for the soil and area and seeding rates are also critical components."

Since the program was created in 1983 by the Division of Agriculture with funding from the Rice Research and Promotion Board, producers enrolled in the program have averaged about 20 bushels an acre better than the statewide average yield. This is made possible by teaching farmers how to use intensive cultural management and integrated pest management practices.

The goals of the rice verification program are to:

- Educate producers and county agents on the benefits of using U of A research-based recommendations to improve their yields and net returns
- Conduct on-farm field trials to verify research-based recommendations
- Aid researchers in identifying areas of production that require further study
- Fine-tune existing recommendations that contribute to more profitable production.
- Incorporate data from the rice research verification program into educational programs at the county and state level

If you're a producer enrolled in the verification program, and your goal is to pad your bottom line, you'll be able to pick up the phone and call your county extension agent or Mazzanti for advice. ■

inside:

Arkansas rice

ARKANSAS Rice CHECK-OFF

Arkansas Rice Research and Promotion Board

January 2009

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

Did you know?

- Rice is high in complex carbohydrates, contains almost no fat, is cholesterol free, and is low in sodium.
- A good source of vitamins, minerals and all eight essential amino acids, a half cup of cooked rice contains less than 90 calories.

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