



Texas Rice

Texas A&M University System
Agricultural Research and Extension Center
Beaumont, Texas

July 2005 Volume V Number 5

58th Annual Rice Field Day

From 1500 lbs/A in 1939 to 8000 lbs/A today - that is the impact of rice research in Texas. And not just yields have improved - but disease resistance, days to maturity, milling yields and cooking quality. Scientists at the Texas A&M Research Center in Beaumont have worked for nearly 100 years to improve rice production so our farmers can compete in a global marketplace.

The 58th Annual Field Day is an excellent opportunity for producers to visit the Center and see firsthand the research being conducted, and meet the scientists who make it happen.

The date is Thursday, July 14th with field tours beginning at 8am and lunch served at 12 noon.

Dr. Anna McClung will present an overview of three new cultivars that have been released during the last year from southern rice breeding programs: Spring (AR), Trenasse (LA), and Presidio (TX).

Dr. Rodante Tabien will discuss the development of high yielding rice varieties for Texas, mutation breeding for herbicide tolerance, and the development of ultra high yielding cultivars that use less water due to the elimination of the ratoon crop.

Dr. Lee Tarpley will discuss using plant growth regulators (PGRs) applied to the main crop to improve ratoon crop yield, Mr.

Abdul Mohammed's results showing that canopy shading from main crop stubble can decrease ratoon tillering, and Mr. Elliott Rounds' research addressing the feasibility of using PGRs to prevent rice crop environmental stress response.

Mike Jund will provide a summary for the Plant and Soil Nutrition Project's work evaluating new varieties and hybrids for main and ratoon crop yield potential, milling quality, and other agronomic traits under Texas growing conditions.

Dr. M.O. Way will provide an update on insect problems encountered in 2005, and a overview of novel chemistries for insect control. He will also give a demonstration of new sampling methods for rice insect pests developed at the Beaumont Center, and share current news regarding rice pesticide regulatory issues.

Dr. Joe Krausz will discuss rice disease problems, current recommendations for rice disease control, and evaluations of selected fungicides for rice diseases.

Drs. Pinson and Fjellstrom will report on progress that is being made to molecularly tag the many genes that underly sheath blight resistance and milling quality. This research is part of a project known as RiceCAP, a \$5 million, 9-state, multidisciplinary effort to extend



Dwight Roberts, President & CEO of the US Rice Producers Association will be a featured speaker at the 2005 Field Day.

molecular gene tags from the realm of single genes, to traits controlled by many genes.

After the tours, the morning program will feature Dr. Elsa Murano, Texas A&M's new Vice Chancellor and Dean of Agriculture and Life Sciences, and Director of the Texas Agricultural Experiment Station. She will discuss future plans for the Texas A&M Agriculture Program.

Ron Gertson will give an overview of the EQIP program and its use for improving on-farm water management.

Dwight Roberts, President & CEO for the US Rice Producers Association, will share timely information about international trade issues, including recent legislation regarding Cuba.*

From the Editor...



Welcome to the latest issue of *Texas Rice*. July marks the 96th year since the Beaumont Center was created to serve the needs of the Texas rice industry and the people of the Upper Gulf Coast of Texas. The Center plays an integral part in fostering the economic well being of our state's agriculture, most importantly its rice industry.

The Center's major purpose is the development of sound science that leads to the development of improved rice varieties and superior production and management methods. Improvements in rice varietal performance have historically accounted for 35-50% of increases in crop yields, with the remaining 50-65% attributed to increased plant protection and crop management.

At the end of World War II, rice yields in Texas averaged about 1,600 to 1,800 lbs/acre; the plants were tall and leggy and tended to lodge (fall down) by the end of the season. Grain quality was much lower back then, and if varieties from that period were grown today they would not meet our current quality standards. Almost none of the modern tools of crop production and management existed back then. The world was just beginning to see the potential value of chemically based fertilizers and pesticides.

On July 14th, we celebrate our 58th field day, where we provide our visitors a glimpse of the types of research our scientists conduct for the Texas rice industry. We kick off the day with a field tour. Anna McClung and Dante Tabien will provide an overview of the Center's varietal development program, Lee Tarpley and Mike Jund will provide an overview of the plant physiology and rice agronomy program, and Mo Way and Joe Krausz will highlight the entomology and plant pathology programs, respectively. The field tour ends at the Center's auditorium, where Shannon Pinson and Bob Fjellstrom will provide an overview of cutting-edge research focusing on developing DNA tools to rapidly identify the presence of superior genes in potentially new rice varieties.

The field tour will be followed by our morning program, which will feature three speakers. Dr. Elsa

Murano, the Vice Chancellor for Agriculture for the Texas A&M University System, will provide a vision for the university's agricultural research program. Elsa has been in her position for six months and has a grueling schedule of meeting with agricultural leaders and state legislators across the state. Elsa brings excitement and strong organizational skills to her position and all of us in the Agriculture Program are eager to help bring her vision to fruition.

Ron Gertson, a Texas rice producer, will provide an overview of the USDA Environmental Quality Incentives Program, commonly referred to as EQIP. This program makes available millions of dollars annually in cost sharing funds aimed at implementing on-farm conservation measures. Ron is extremely knowledgeable about water conservation and the EQIP program. He will provide valuable information on the types of on-farm conservation measures supported by EQIP.

Dwight Roberts, President of the U.S. Rice Producers Association, will provide an overview of rice markets, and will address current and pending federal legislation that impacts U.S. rice markets.

The morning program will be followed by our luncheon, where we expect to host around 400 people. The luncheon provides an opportunity for our scientists, farmers, and local community leaders to interact informally. If you have the time, please stop by and enjoy field day with us.

Hope you enjoy this issue of *Texas Rice*. Keep on sending us your suggestions for future articles.

Sincerely,

A handwritten signature in black ink that reads "L. T. Wilson".

L.T. Wilson
Professor and Center Director
Jack B. Wendt Endowed Chair
in Rice Research

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58th Annual Rice Field Day

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Farming Rice

a monthly guide for Texas growers

Providing useful and timely information to Texas rice growers, so they may increase productivity and profitability on their farms.

Multiple-Inlet Irrigation in Rice Production

Most rice is irrigated by putting water into only the top cut. Although this is simple, it is not the most efficient way to irrigate. During flushing with a single inlet, water flows into and fills the first cut. When the first cut is full, the first cut lower levee is opened so the water in the first cut will drain into the second cut. This procedure is repeated until the lower part of the field is reached. Seedlings in the upper cuts can be stressed during flushes and flood establishment due to long periods of submergence. Seedlings in the lower cuts may be stressed by lack of moisture and strong winds, and levee washouts may occur due to water stacking. With the flow-through system, flush water requirements are hard to estimate and limited freeboard is available for rainfall entrapment. This is demonstrated by the fact that a large amount of the inflow becomes runoff.

In the mid-1980's, TAES scientists Dr. Garry McCauly and Dr. Gerald Crenwelge conducted research to determine methodology and benefits of multiple-inlet irrigation. They found that the use of multiple-inlets increase flush efficiency. When compared with average fields that did not have multiple-

inlets, the inflow was reduced from 3.3 inches to 2.1 inches, and runoff was reduced from 1.4 inches to 0.3 inches. This was a 36 percent reduction in inflow and a 79 percent reduction in runoff for the fields with multiple-inlets. Water saving from multiple-inlets also carries over to the flood period. The inflow was reduced by 9 inches while runoff was reduced 6 inches.

For those using surface water, a multiple-inlet system requires that a lateral be constructed along the side or through the field, unless rigid pvc pipe is used. The objective is to release water at the point of need in the field.

In Arkansas, Dutchie Papan, an irrigation supply dealer in Stuttgart, demonstrated the multiple-inlet system using poly-pipe in the early 1990s, but it took a few years to be widely accepted by producers. Dr. Earl Vories, Agricultural Engineer with the USDA-ARS Cropping Systems & Water Quality Research Unit in Portageville, Missouri, and Phil Tacker, Extension Engineer with the University of Arkansas, conducted studies during the 1999-2002 growing seasons to evaluate this method of irrigation.

Their objective was to investigate whether a multiple-inlet approach using poly-pipe would result in less water being pumped for rice production than conventional flooding, when applied on production-scale fields by the regular farm managers, and if the system would affect rice yield.

Using this system a poly-pipe is connected and gates or holes are placed in each paddy. In this way, each paddy is watered to-



Drs. Jason Bond and Earl Vories at the Crowley rice field day, demonstrating the use of poly-pipe for multiple-inlet irrigation.

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MI Irrigation continued...



The poly-pipe is easily attached to risers or bonnet heads, making for quick installation. Dr. Vories also said, when flat, the pipe can be driven over with farm equipment without damage.

gether, instead of receiving overflow from a higher paddy. By adjusting the gates, each paddy fills at the same time.

They found that since it is not necessary to overflow the paddies with multiple inlet irrigation, seepage through the outside levees is reduced. In addition, since each paddy fills at the same time, it is easier to apply the exact amount of water needed without runoff. More efficient water management results in lower costs to the producers and allows more effective irrigation of other crops. It also helps relieve some of the water shortages being encountered in many areas of the country.

The study consisted of paired fields located close together, with the same cultivar, soil type, planting date and management practices. One of the fields was randomly assigned as a conventionally flooded field (CONV) and the other was assigned as multiple-inlet rice irrigation (MIRI). Flowmeters were installed in the inlets to both fields. When the farmer was ready to begin the flood period, Extension personnel installed the flowmeters and assisted in setting up the MIRI field. Disposable, thin-walled, polyethylene irrigation tubing (e.g., Poly-Pipe, Armin Corp., Jersey City, NJ) was connected to the well or riser and run over the tops of the levees through each paddy. Adjustable gates were installed to allow the proper amount of water to enter each paddy.

Once the system was installed, the flow to the individual paddies could be fine tuned so that all pad-

dies filled up at the same time. After the final draining of the fields, water pumped on the field was recorded by Extension personnel and the farmers provided yield data.

Their results showed that the MIRI system required 24% less irrigation water than conventional flooding. In addition, a 3.4% yield increase was associated with the MIRI system.

While speaking at the Crowley rice field day, Dr. Vories recommended that growers use the 10mil poly-pipe (\$200 for a quarter mile roll) rather than the thinner 7mil. He also said that most people's experience showed that the poly-pipe was only good for one season, although some of the manufacturers' websites claim the poly-pipe can be used for multiple seasons. Dr. McCauley pointed out that the poly-pipe only works when water is pumped from a well, because of the pressure requirements, and because of debris that may come in with the surface water.

For more information contact Dr. Garry McCauley at 979-234-3578, email gnmccaule@sbcglobal.net, or Dr. Earl Vories at 573-379-5431, email VoriesE@Missouri.edu.

Information for this article obtained from: TAES Fact Sheet BCTR-86-10-4, G.N. McCauley, *Irrigation Water Management in Rice*; and *Multiple Inlet Approach to Reduce Water Requirements for Rice Production*, E.Vories, Applied Engineering in Agriculture 21(4). Mention of trade names or commercial products is solely for the purpose of providing specific information and does not imply recommendation or endorsement by the U.S. Department of Agriculture, TAES or the University of Arkansas.



Multiple-inlet irrigation insures timely and consistent floodwater depth, especially important for young seedlings.

Golden Rice Humanitarian Board Statement on Development of New Strain with Higher Levels of Beta-Carotene

The Golden Rice Humanitarian Board welcomes the peer reviewed study, published in the April issue of Nature Biotechnology, detailing the development of a new variety of Golden Rice that contains approximately 23 times more beta-carotene or “pro-vitamin A” than the original Golden Rice variety. The human body converts beta-carotene to Vitamin A.

The Board encourages further research to determine how the new variety may play a part in the ongoing global effort to fight vitamin A deficiency in poor countries. Vitamin A deficiency is the leading cause of preventable blindness in children.

According to the World Health Organization, dietary vitamin A deficiency (VAD) causes some 250,000 to 500,000 children to go blind each year. More than half those who lose their sight die within a year. VAD compromises the immune systems of approximately 40 percent of children under five in the developing world, greatly increasing the risk of severe illnesses from common childhood infections. VAD is most severe in Southeast Asia and Africa.

While the large beta-carotene increase in Golden Rice is an exciting advance, it is important to keep in mind that even with elevated levels of vitamin A, Golden Rice is not by itself a solution to malnutrition in developing countries. Malnutrition is rooted in political, economic and cultural issues that cannot be magically resolved by a single agricultural technology. Golden Rice offers developing countries another choice in the broader campaign against malnutrition.

This new development is further evidence that Golden Rice could compliment existing efforts that seek to end blindness and other diseases caused by vitamin A deficiency. These other efforts include fortifying basic foodstuff with vitamin A, distributing vitamin A supplements, and increasing consumption of other foods rich in vitamin A. Golden Rice is but one tool in a larger toolbox from which country health officials, farmers and consumers could choose in their efforts to fight vitamin A deficiency.



Center: Co-inventor of Golden Rice, Professor Ingo Potrykus, Professor Emeritus, Swiss Federal Institute of Technology, and chair of The Golden Rice Humanitarian Board.

The new development increases the amount of beta-carotene in the new rice variety by incorporating a gene that produces a safe, naturally occurring enzyme found in corn.

Three of the world’s four most populous countries, China, India and Indonesia, are considered “rice based societies.” Rice is a good provider of calories and protein, but rice scientists have long recog-

nized its micronutrient deficiencies. Milled white rice contains essentially no beta-carotene and unmilled brown rice contains a very small amount.

Public rice research institutions in the Philippines, Vietnam, India, Bangladesh, China and Indonesia are in various stages of leading efforts to develop locally adapted Golden Rice varieties.

Once locally developed varieties containing the Golden trait have been cleared at the national level for biosafety, they will be made available to subsistence farmers free of charge. The seed will become their property and they will also be able to use part of their harvest for the next sowing, free of cost. Golden Rice is compatible with farmers using traditional farming systems, without the need for additional agronomic inputs. Therefore, no new dependencies will be created. Furthermore, the Golden trait does not pose any known risk to the environment. The Humanitarian Board believes that social acceptance of Golden Rice is an important issue and must be addressed with and by partners in developing countries.

The Humanitarian Board is aware that as a genetically modified organism, Golden Rice will and should be given intensive scrutiny and that it also could be the subject of some controversy. Countries where Golden Rice could provide health benefits should be

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provided with the opportunity and information to pursue their own independent decision-making process and should not be pressured to either accept or reject Golden Rice.

Reaching the needy in target countries requires a highly professional and interdisciplinary team. For this purpose, an honorary Humanitarian Board, composed of internationally recognized experts drawn from reputed institutions, is working closely with local groups in rice-based societies to help provide counsel on the continued discussions about, and development of, Golden Rice. The Humanitarian Board is chaired by Professor Ingo Potrykus, Professor emeritus, Swiss Federal Institute of Technology, and co-inventor of Golden Rice, together with Professor Peter Beyer, University of Freiburg.

Syngenta Foundation Videos Tell the Story of Golden Rice

If Golden Rice could speak, it would probably tell its story through the voices of Dr. Ingo Potrykus, Dr. Peter Beyer and Adrian Dubock. Now, the Syngenta Foundation website is offering a rare opportunity to hear each one of their stories, and how they took Golden Rice from the drawing board to reality.

Last year, designated by the United Nation as the Year of Rice, the Syngenta Foundation for Sustainable Agriculture asked the two inventors of Golden Rice, Drs. Ingo Potrykus and Peter Beyer, to talk about their discovery and about its future. In addition, the Syngenta Foundation also invited Adrian Dubock to talk about Syngenta's role in the Golden Rice project.

The story starts in the early 1990's, at the Swiss Federal Institute for Technology located in Zurich, with a unique idea from Dr. Ingo Potrykus. He saw that millions world-wide suffered from blindness and other diseases related to vitamin A deficiencies. He knew that the areas of the world most affected relied on rice in their diet, and thus embarked on a journey to develop rice that would produce pro-vitamin A, or beta-carotene, on its own, which the human body can then use to produce vitamin A.

Armed with the understanding of genetic engineering, Dr. Potrykus teamed up with Dr. Beyer at the University of Freiburg. Dr. Beyer brought the essential understanding of the genetics and biochemistry of pro-vitamin A, or beta-carotene, production in plants

that would help ensure the project's success.

Dr. Beyer suggests, "Poverty reasons may lead to a predominant consumption of staple foods like rice, and as a consequence people will suffer from vitamin A deficiencies, because rice does not contain any beta-carotene."

Dr. Beyer presents a case for producing biofortified crops, such as Golden Rice, due to the cost of intervention strategies that are intended to prevent micronutrient deficiencies. In most cases, this comes in the form of vitamin supplementation, industrial fortification (fortified food products, such as cereal and milk) or education.

Yet, Dr. Beyer notes that all supplementation programs have their limitations and suggests that "we would like to have plants do the biofortification themselves," because it would solve the root of the problem. If developing countries could be given seeds that would grow Golden Rice, vitamin A supplementation dependency would essentially be done away with.

Dr. Potrykus states that without Syngenta's help and direction, biofortified rice would have remained a scientific curiosity, but it would not have contributed to solve vitamin A deficiency.

Often accused of having a hidden agenda, in his presentation Adrian Dubock quickly lays to rest concerns surrounding Syngenta's current participation in the Golden Rice project. "Today Syngenta has no commercial interest in Golden Rice, but as you can see the support for the humanitarian project continues. The licensing agreement clearly explains that Golden Rice will be made freely available to poor farmers, who can trade Golden Rice locally – thus ending the concern that genetically engineered crops run the risk of creating dependency for farmers."

He further explains how licensing agreements facilitate regulatory submissions, increase outside participation, define publication policies with regards to research and over all, they simply provide clarity for all participating parties.

The Syngenta Foundation is offering the videos at no charge to help foster a better understanding of the issues surrounding Golden Rice. To order, go to http://www.syngentafoundation.com/golden_rice/order.htm

*Excerpted from an article by Robert Derham,
Checkbiotech, Basel, Switzerland*

State, National and International News...

RICE PRODUCERS URGE REVERSAL OF NEW U.S. RESTRICTIONS ON SALES TO CUBA

Houston, Texas - Concerned about the decline in export sales to Cuba as a result of the announcement by the U.S. Department of Treasury in February restricting payment terms, the US Rice Producers Association called upon the U.S. Congress to resolve the situation and allow normal cash sales as intended by the Trade Sanctions Reform and Export Enhancement Act that was passed in 2000. Dwight Roberts, President & CEO for the US Rice Producers Association was in Havana, Cuba last week to participate in meetings with Cuban officials and to represent a group of U.S. exporters in a press conference organized and supported by the U.S.-Cuba Trade Association that is based in Washington, D.C.

Pedro Alvarez Borrego, President of Alimport (Cuban Food Agency), was very clear about his country's intentions with regards to the import of U.S. agricultural products with a strong emphasis on rice. "Cuba expects to import 750,000 tons of milled rice during 2005 and U.S. rice exporters can benefit greatly with their participation in the Cuban market," stated Alvarez. "At this moment Cuba occupies third place among the importers of rice behind only Mexico and Japan, and if there was an elimination of these current restrictions, without a doubt we would make Cuba the number one importer of U.S. rice," added Alvarez. The U.S. exported 160,000 tons of rice to Cuba during calendar year 2004.

According to the figures from the U.S. Department of Agriculture, sales of agricultural products to Cuba for the first four months of 2005 are 26% below the levels of the same period in 2004. The value of U.S. rice exports have dropped more than 66% during the period as Cuba has turned to their more reliable sources half a world away in Vietnam and China. "This situation is beyond frustration and is the kind of news that makes a rice farmer's blood boil. The U.S. rice industry is being penalized and we are losing our reputation as a reliable and dependable supplier, a market issue that gives our competition a huge advantage with our neighboring country," stated Roberts. "We will not let this issue be put on Washington D.C.'s back-burner because we need this market for survival. It is a strategic part of our future," added Roberts.

This week the House of Representatives is scheduled to consider the Treasury, Transportation, Housing and Urban Development Appropriations bill that includes language added by Representative Jo Ann Emerson (R-MO) to reverse the new Treasury Department trade restrictions. "Rice producers urge Congress to support legislation to reverse the Treasury Department's restrictions on agricultural trade with Cuba. These onerous restrictions run contrary to the intent of the 2000 Export Enhancement Act to open trade with Cuba. In addition, we applaud efforts to facilitate the right of U.S. citizens to travel to Cuba" added Roberts.

SENATE PASSES ENERGY BILL, LEGISLATION FACES TOUGH HOUSE NEGOTIATIONS

WASHINGTON - The Senate overwhelmingly approved energy legislation embraced by both Republicans and Democrats Tuesday, but hard bargaining looms with House GOP leaders who support measures more favorable to industry.

After finishing most work on the bill late last week, the Senate approved the sweeping legislation 85-12. It includes a proposed \$18 billion in energy tax breaks, an expansion of ethanol use and measures aimed at increasing natural gas imports to meet growing demand.

But lawmakers acknowledged that the measure would do little, if anything, in the short run to stem the soaring cost of energy including oil that this week has eclipsed \$60 a barrel and gasoline that last week averaged \$2.22 a gallon at the pump, according to the Energy Department.

"We still have many hurdles to overcome," said Sen. Jeff Bingaman, D-New Mexico, who led the Democrats in fashioning the massive bill. The bill passed by the House in April differs sharply from the Senate legislation over oil production and the degree of emphasis on conservation.

Sen. Pete Domenici, R-New Mexico, said the Senate bill would usher in "a new policy for the United States ... that energy should be clean, renewable and that we have conservation" to curtail energy demand. He said it would help assure a broad mix of energy sources in the future from nuclear power to wind energy.

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News continued...

But the Senate deliberately skirted some of the most contentious energy issues facing Congress.

The legislation says nothing about drilling in the Arctic National Wildlife Refuge in Alaska, although that's a top priority of the Bush administration. The House-passed bill calls for developing the refuge and assumes \$2.6 billion over 10 years in federal revenue from refuge oil lease sales.

And unlike the House bill, it is silent on giving aid to larger oil companies and refiners who want protection against environmental lawsuits because one of their products, the gasoline additive MTBE, has contaminated drinking water in hundreds of communities. House leaders have insisted an MTBE waiver be part of energy legislation.

There have been discussions among House Republicans to establish a federal fund for MTBE cleanup along with liability protection for the manufacturers.

President Bush praised the Senate for passing the measure, saying it would help U.S. economic growth by addressing the causes of high energy prices and the nation's dependence on foreign supplies of energy. "I urge the House and Senate to resolve their differences quickly and get a good bill to my desk before the August recess," he said.

Energy Secretary Samuel Bodman said he was prepared to try to help resolve the MTBE issue. But for now, he said, he views it as an issue to be resolved by the lawmakers.

The Senate bill, cobbled together during months of behind-the-scenes discussions and two weeks of floor debate, was viewed by its supporters as an attempt to expand and diversify the country's energy supply and reduce its reliance on oil.*

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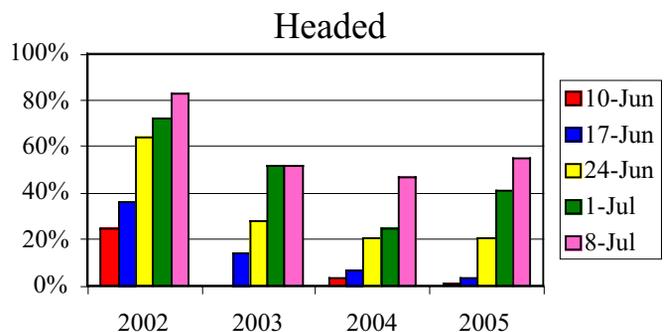
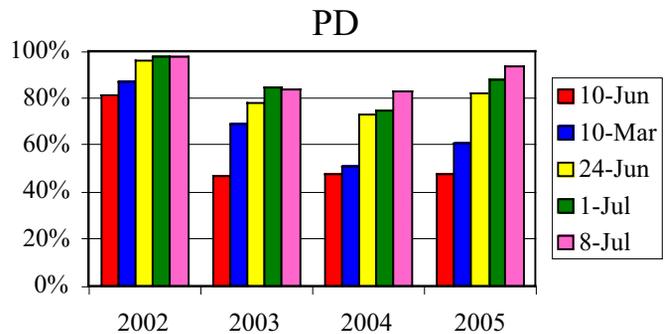
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Rice Crop Update

As of July 8th, 94% of the Texas rice crop had reached PD, compared to 83% last year, and 98% in 2002. Fields headed were at 55%, ahead of last year's 47%, but well behind 2002 when the crop was 83% headed on this same date. In many areas, drought conditions have forced farmers to apply irrigation water to maintain permanent flood.



*** Reminder ***

Rice Tec Field Day

Friday, July 15th

Alvin, TX

For more information call

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