Southwest Region

Rice Research Station News

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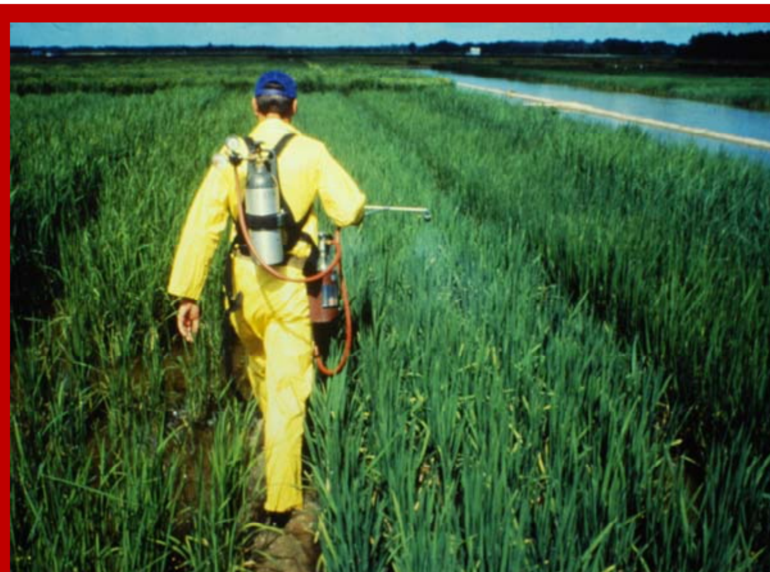
Plan Your 2013 Fungicide Program

Fungicide trials have been conducted at the Rice Research Station since the early 1980s. Various fungicides and fungicide combinations were applied at different growth stages, ranging from seven days after panicle differentiation to 50 percent to 70 percent heading. Varieties selected were susceptible to sheath blight, blast or *Cercospora* and were managed to favor disease, i.e. inoculated, fertilized with high N rates, planted late, and/or planted in high disease pressure fields.

The studies demonstrated that fungicide selection was important in sheath blight, blast and *Cercospora* control. Effective fungicide use must be based on the presence of the most damaging disease in a field. This is determined by knowing the varietal susceptibility, field disease history, weather conditions in your area, and, most importantly, by scouting for disease in the field multiple times during the growing season.

Effective fungicide use must be based on the presence of the most damaging disease in a field.



Propiconazole-containing fungicides – Tilt, PropiMax, Bumper, Stratego, Quilt and Quilt Xcel – were most effective against *Cercospora*. But Tilt, PropiMax and Bumper were very weak against sheath blight and had no activity against blast when used alone.

The strobilurin fungicides had activity against both sheath blight and blast.

Azoxystrobin-containing fungicides – Quadris, Quilt and Quilt Xcel – were more effective against sheath blight than the trifloxystrobin-containing fungicides, Gem and Stratego. But the trifloxystrobin-containing fungicides were somewhat more effective against blast.

If the strobilurin-resistant *Rhizoctonia solani* is present in the field, Sercadis must be used to control sheath blight; however, this fungicide has no activity against blast or *Cercospora*. AgCenter employees worked with Louisiana Department of Agriculture personnel to receive a Section 18 for Sercadis in 2012. Efforts are underway to obtain a Section 18 for 2013.

Multiple fungicide applications may be necessary to manage multiple diseases in a field because of selective activity, disease severity and label restrictions. There are limitations on fungicide application timings. Therefore, you must read and follow the label. Also, check fungicide prices to determine the most cost-effective program. For additional information and current disease control options, contact your local LSU AgCenter extension agent for information and advice.

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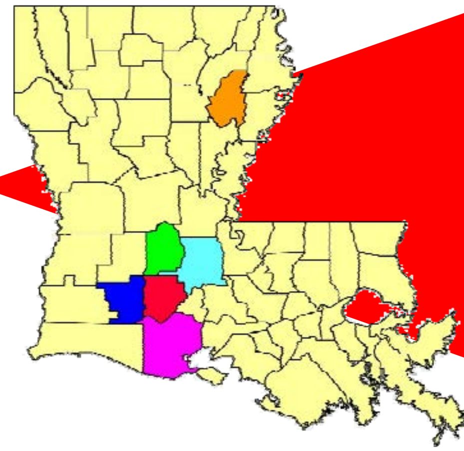
Special Dates of Interest:

Rice Research Annual Field Day
Wednesday, June 26, 2013

Rice Technical Working Group
February 18-21, 2014
New Orleans, LA

Off-Station Rice Research in Louisiana



The rice crop in southwest Louisiana appears to be off to a good start in spite of cool and wet conditions on the earliest seeded rice. Certainly, the abundant rainfall this spring has lessened the potential for surface water shortages or salt water issues, at least on the front end of the growing season. In spite of the rain, most rice planting areas have had long enough periods of dry weather to allow for drill and dry broadcast seeding. A substantial acreage in the region was also water-seeded this year. As of early April, most of the research areas and foundation seed fields have been planted at the Rice Research Station. In addition, several of our off-station research locations have been planted.

These off-station research locations are critical to our research efforts. They are planted in farmers' fields and are basically miniature research stations. In most cases, we have independent flooding and drainage capabilities. This allows us to flood and drain fields independently of the farmers' crops in adjacent fields. While these research areas are sometimes seeded into a stale or no-till seedbed, the farmer will typically work the area to be planted. We will then transport research planting equipment to the site and plant the trials just as we do on the station. At harvest time, we transport our small plot combines and harvest these trials just as if they were located on the station.

In 2013, we will have 10 off-station research sites in six parishes – Acadia (R&Z Farm and Hundley Farm), Evangeline (Bieber Farm, Fontenot Farm and LaHaye Farm), Franklin (Owen Farm), Jeff Davis (Hoppe Farm), St. Landry (Sunland Properties) and Vermilion (Hardee Farm and Lounsberry Farm). Rice research has been conducted at some of the farms for many years. For example, 2013 will mark the 29th consecutive year at the Lounsberry Farm site and the 19th consecutive year at the Hoppe Farm site.

29 consecutive years

Rice Research Station
Off Station Research Location
Kent Lounsberry - Cooperator

Rice Research Station
Off Station Research Location
Jimmy Hoppe - Cooperator

19 consecutive years

These off-stations sites are extremely valuable for rice research efforts. For example, the breeding project has a Commercial-Advanced (CA) yield trial at most locations. The CA trial has 60 lines, including released varieties and advanced experimental pure-lines and hybrids, from breeding work at the station. Having these lines tested at multiple locations greatly enhances our ability to determine the yield, milling and overall agronomic performance of newer varieties as well as the experimental lines. We need this information to decide which newer varieties will be recommended to Louisiana rice producers, as well as which experimental lines have good potential to be released as new varieties or hybrids. This allows for evaluating these lines under multiple environments, which provides variation in soil types, disease pressure, planting dates and general differences in overall growing conditions. Through the years, these off-station sites have shown us that we cannot rely totally on the performance of a rice line on the Rice Station. Sometimes a line will consistently perform well here on the station but not so well at some of the off-station sites. These multiple locations also provide information on performance stability. Some lines may do extremely well at some locations in some years but not nearly as well in other environments. Other lines may seldom or never be the best performer in any trials but have consistently good and stable performance.

These multiple locations are important in evaluating fertilizer needs for new varieties. These locations vary from very light textured soils in southwest Louisiana to heavy clays in the central and northeast rice growing areas. These trials help in evaluating the nitrogen requirement of varieties over different soil types. In addition, some sites allow the opportunity to conduct research on micronutrients that are typically not lacking in Rice Station research area soils.

Another dividend of these off-station sites is that we host field days at these locations. Through the efforts of extension agents and local grower groups, parish and regional field days are held at most of these research locations each year. This allows growers and others to view the latest in new rice research technology under the growing conditions of their production area.

Planting off-station plots

This off-station research is only possible because of funding provided by rice producers through checkoff funds administered by the Louisiana Rice Research Board. Louisiana rice farmers have consistently overwhelmingly approved a five-year continuation of the valuable research funding program. This program has been in existence for more than 40 years and has led to numerous new varieties and technologies that have helped keep the Louisiana rice industry economically viable.

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The LSU AgCenter Rice Research Station Rice Cam will show the progress of a foundation seed production field of the variety CL111. The field was planted on March 25 at a seeding rate of 40 pounds per acre. CL111 is a very early long-grain Clearfield variety that will be widely grown throughout Louisiana as well as the southern U.S. rice production region.

Pest of the Quarter Texasweed

Texasweed Must be Controlled in Rice Fields

Texasweed [*Caperonia palustris* (L.) St.-Hil.] is considered a native plant to the warmer climates of the Americas. It was first identified in Texas in 1920. Texasweed can grow on wet soils, roadsides, open woodlands, waste sites and, most importantly, in rice fields. It has several synonyms: birdeye, doveweed, three-ball Johnny, and sacatropa. Some incorrectly refer to it as Mexicanweed [*Caperonia castaneifolia* (L.) A. St.-Hil.], which is a perennial and better known by the common name chestnutleaf false croton.

Texasweed is considered an annual with an erect growth habit and can reach 12 to 120 inches in height and thrives in a variety of environments. Cotyledons of texasweed are smooth, and stems and petioles are coarsely pubescent or hairy. Leaves can be 1 to 6 inches long with serrated margins.

Texasweed produces two colors of seed. The fruit, referred to as a capsule, usually contains three seeds, two of them are usually dark brown and one is often times light grey. The light grey seed is not viable and can often be easily crushed. The viable seeds have a pitted texture and dark brown color. They are approximately 0.1 inch in diameter. These seeds cannot be cleaned or separated in a combine during rice harvest.

Research conducted in Mississippi indicates one texasweed plant can produce 890 seeds with 90 percent seed viability. Under perfect growing conditions, 801 seedlings can germinate and establish from one texasweed plant. This makes it vital for this weed to be controlled. The seed of texasweed can germinate in temperatures from 40 degrees to 104 degrees, in light or dark conditions, in pH values from 4 to 10, and under high concentrations of salt. Texasweed can emerge from depths of 0 to 3 inches. The weed cannot germinate and emerge under flooded conditions; however, a plant 1 inch tall can survive in a flood up to 4 inches for 14 days. These characteristics indicate texasweed is the perfect weed for rice culture.

Research conducted in Louisiana suggests that 1 texasweed plant/yd^2 can reduce rice yields 5 percent. A population as high as 10 to 50 plants/yd^2 can reduce yields 31 percent to 61 percent. Yield loss is more than likely due to a lack of tiller production of rice, but rice has the ability to compensate by increasing the number of seed per panicle. Texasweed can cause a yield loss in rice when allowed to compete from one to six weeks.

Research conducted near Jennings indicates that many post-emergence herbicides can control texasweed when it has fewer than four leaves. However, when allowed to establish and grow to have more than four leaves, most rice herbicides that control small texasweed no longer are effective. Aim or Ultra Blazer are very active on texasweed and should be considered when rice is infested with this weed. Ultra Blazer should be the herbicide of choice when Texasweed is larger than the four-leaf stage.

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Flowering texasweed, control is difficult for this size texasweed.

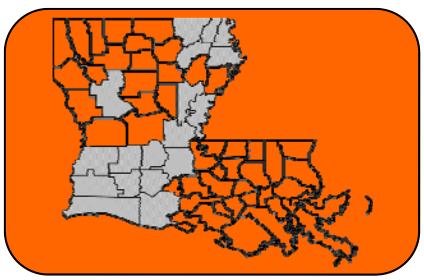
Cotyledon to 1 leaf texasweed, best time for herbicide application.

Texasweed seedpods, each structure contains 3 seed.

Louisiana Rice Verification Program

The Louisiana Rice Research Verification Program has been funded by the Rice Research Board checkoff funds for the past 15 years, following a pilot program in 1997. It was originally intended to be a five-year program, but its popularity has kept it going well beyond that period. The purpose of the verification program is to demonstrate the most cost-efficient production of rice, increase confidence of rice growers in extension and research recommendations, increase confidence of county agents and specialists in LSU AgCenter recommendations, educate county agents and growers in all aspects of rice production, and develop an economic database for rice production.

The number of program participants each year has varied from as few as three to as many as 12. This year there will be five participants. The shaded parishes in the accompanying map are parishes where verification program fields have been at one time or another since the beginning. This year verification fields are located in Evangeline, Jefferson Davis, St. Landry, Vermilion and West Carroll.



Rice fields in the program will be monitored on a weekly basis, and all recommendations will be made by AgCenter personnel. We will collect yield and economic data at the end of the season.

The first field planted this year, which was in Vermilion Parish, was water-seeded with the variety Mermentau. It has struggled with cold weather, birds and other problems, just like most of the farmers in the area.

In Evangeline Parish, the farmer drill-seeded CL111 on March 19. We did not call emergence until April 2, which is a full two weeks after planting when 10 days is typical.

The hybrid variety CLXL729 was drill-seeded into a stale seedbed in Jefferson Davis Parish on March 27. Emergence was called on April 6, but herbicide and permanent flood have been delayed because of high winds and low temperatures.

Catahoula was drill-seeded into a prepared seedbed in St. Landry Parish on April 2. Emergence had not been called as of this writing.

The field in West Carroll had not been planted when this article was written. A hybrid is intended to be planted at that location.

Much of the information used in weekly editions of Field Notes comes from observations in the verification fields. Farmers, dealer representatives and consultants often will either meet with us or ask us to look at other fields in the area when we visit fields. The exchange of information among all parties benefits everyone. We invite anyone interested in learning more about rice production to meet with us and walk these fields each week. Those participants who have been the most involved have said it was well worth the interruption of the day for an hour or so a week.

Ultimately, we hope everyone benefits from the program even if they are not direct participants.

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Update on Marker-Assisted Selection

Every cell in a rice plant contains a vital chemical component called deoxyribonucleic acid (DNA). DNA holds the genetic code for plant function and development. DNA determines how a rice plant performs in the field. Each superior rice cultivar contains sets of DNA coding for superior performance. Knowing those specific sets of DNA will help design and develop superior cultivars. But, that is a gigantic achievement. Current technology, however, represents a small step in a big leap that needs to be made. Marker-assisted selection is a sneak preview of future possibilities. Nonetheless, it is already useful to assist in rapid selections for a number of important traits in rice, including blast resistance, herbicide resistance, male sterility, aroma, grain weight and panicle blight resistance. These traits represent a group of simple traits.

Expanding to more complex traits (yield included) requires massive technological advancement. Scientists around the world are working to perpetuate the process. Although it seems slow in terms of its effect on crop yields, incredible technological advancement has been made. For example, the cost to sequence the human genome was more than $95 million or about $5,000 for 1 Mb (one million nucleotides) in 2001. Now, the cost has dropped to $5,700 per genome or $0.06 per one million nucleotides at the beginning of 2013. The modern sequencers are 50,000-fold faster than the original sequencer. Both reduction in the cost and sequencing speed have improved because of Moore's Law, which is often used to describe a long-term trend in the computer hardware industry that involves the doubling of computing power every two years. For DNA sequencing, the Moore's Law took effect in January 2008 when the sequencing centers changed from Sanger-based (dideoxy chain termination sequencing) to “second generation” DNA sequencing technologies.

This new technological capability will allow more exploration of the genetic properties in wild rice, landraces and elite varieties based on their DNA sequences. It will facilitate systematic harvest of beneficial traits and reintroduction into the adapted cultivars. As genome sequencing becomes more affordable, re-sequencing of thousands of cultivated and wild rice genomes will happen. This comparative genetic information will help scientists study gene functions associated with rice production and, perhaps, it is the critical beginning toward identifying specific sets of DNA that can be used to develop superior cultivars.

The on-going marker-assisted breeding at the Rice Research Station includes introgression of important genes – such as drought tolerance, cold tolerance (at seedling stage), salt tolerance, aroma (Jasmine), grain weight and panicle blight resistance genes – from outside the U.S. genetic pool into adapted Louisiana cultivars and breeding lines. The marker-assisted selections were focused in the early generations of F_2 and F_3 lines. Lines containing fixed allele for the target genes were grouped to facilitate cost and labor efficiency. For a single gene target, fixed target alleles can usually be obtained through screening of the F_2 or F_3 progeny lines. More elaborate crossing schemes, however, were used for a multiple gene target. The schemes were developed to keep the volume and cost of marker screening at its minimum level. Once the target genes have been fixed, the progeny lines were advanced and subjected to regular breeding selections. The most viable and promising breeding lines were then selected. In the 2012 growing season, the five most advanced lines developed from marker-assisted selections were placed in the commercial advanced (CA) trials in collaboration with Dr. Steve Linscombe. These promising lines were selected from 22 advanced lines that were previously tested in the Preliminary Yield trials in 2011. The goal of the CA trials was to evaluate the performance of promising marker-assisted lines under different environments and management practices.

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Maximizing Ratoon Crop Potential

The second (ratoon) rice crop has become an integral part of southwest Louisiana commercial rice production. The ratoon crop will generally yield approximately one-third of that realized in the main crop. Although ratoon yields are much less than that of the first crop, there is a definite economic advantage of growing the ratoon crop. It is economically productive because the input costs for producing the ratoon crop are kept at a minimum. Generally, the only costs associated with a ratoon crop are nitrogen (N) fertilizer, irrigation, harvesting and grain drying. While growing a ratoon crop is economically favorable to a producer, having a successful ratoon crop is not guaranteed every year. Although traditional weather patterns in the southern rice growing region give us the opportunity to grow a ratoon crop, it is often weather that dictates the ultimate success of the endeavor. We cannot control the weather, however, but there are several management strategies and decisions that we can use to improve the probability of success.

The first management decision begins before the main crop is even planted and that is to select an early-maturing rice variety with a high ratoon potential. The second management decision is truly the “go” or “no-go” decision on attempting a ratoon crop. This decision should be made with information gathered from the main crop, including an evaluation of disease pressure prior to harvest, the stubble conditions after harvesting and the date of harvest.

Harvesting the first crop prior to August 15 will generally give the ratoon crop enough days of warm weather to grow. There have been many seasons in the past when a main crop harvested after August 15 produced excellent ratoon yields; however, these were in years with mild fall temperatures and late first frosts. Unfortunately, there is no way of determining if this year will be one of those years. The earlier the main crop is harvested, the better the probability of success with the ratoon crop.

We must also remember that all management practices that we apply to the main crop will have a bearing on the ratoon crop. For example, less-than-optimum weed and disease control will not only reduce yield in the main crop but will also be detrimental to the ratoon crop. A clean first crop will improve second crop yield potential. Another example would be harvesting a main crop in muddy soil conditions. This will certainly lead to increased rutting of the field and reduced ratoon yields in the rutted areas.

There are even times when we may want to make the decision not to grow a ratoon crop at all. For example, high disease pressure will almost certainly spell disaster in the ratoon crop. You also might want to consider not growing a ratoon crop in fields with a heavy infestation of red rice. Take the measures to control the red rice problem now before it becomes more of a problem in future crops.

The final major decision is to determine whether or not to use a stubble management practice. These practices include harvesting at a lower-than-normal harvest height, reducing the stubble height by post-harvest flail mowing or bush hogging to around 8 inches, and rolling the stubble. These practices have all shown a yield benefit in studies conducted at the Rice Research Station in most years. The yield benefit can be up to several barrels per acre in some years. However, both harvesting the main crop at a lower-than-normal platform height, flail mowing, bush hogging and rolling the stubble will delay the maturity of the ratoon crop approximately two weeks. So, if the main crop is harvested at a later-than-optimum date, further delaying the ratoon maturity by using one of these stubble management practices may not be the best decision.

Interest in using a fungicide application in the ratoon crop has gained interest over the past several years. In a recent study at the Rice Station, application of a fungicide four weeks after harvest (coinciding with the first ratoon panicle emergence) did not reduce Cercospora incidence in the ratoon crop. On the other hand, lowering the ratoon stubble height by either flail mowing, bush hogging or harvesting lower did reduce Cercospora incidence.

The next true management decision is when and how much N fertilizer to use. Our past ratoon N studies have shown that 90 pounds of N applied on a dry soil just after the main crop is harvested and immediately followed by a very shallow flood is the best management strategy in almost every study across all varieties and hybrids. If you make a decision to attempt a ratoon crop when the main crop was harvested after August 15, you will need to reduce the N rate. This will reduce the time to maturity of the ratoon crop and also reduce your investment in the ratoon crop. Nitrogen fertilizer should not be applied to the ratoon crop if the first crop is harvested after September 1.

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RICE EXPERIMENT RESEARCH STATION 1909-2009

Focus

'Chippy' Miller never meets a stranger

For the six years that Paul Miller has been working with the field crew at the Rice Research Station, most know him only by his nickname, "Chippy."

"My grandmother gave me that name when I was 2 years old," he said, although he couldn't recall why.

His father died when he was 5, and his grandparents, Louise and Jeff Miller of Iota, helped raise him. His uncle, William Reed, taught him about farming.

Miller went to Iota High School and found work in the oilfield and on farms. "That was the only work a young fellow could find."

He worked for several oilfield drilling companies as a roughneck and derrick man but started working on rice farms around 1993.

He said the late Timmy Miller asked him if he would be interested in working at the Rice Research Station. He's glad he took the job because of the variety of work and his co-workers.

"I like it out here. I like the people I work with," he said.

He credits his grandmother for passing along the joy of cooking. He recalls she would cook homemade bread, and he learned the process. "It was something I could do with my grandma."

Miller said he prefers to cook outdoors with one of several of his black cast-iron pots over an open fire.

He also has five barbecue pits, but he doesn't have a favorite dish. "I try to cook anything."

Miller and his wife, Rita, have two daughters and a son. "I have five grandkids and I'm waiting on No. 6."

Miller's supervisor, Bill Leonards, said Miller has a good work ethic. "We can put him on anything, and he'll get the job done."

Leonards said Miller occasionally cooks for the field crew and enjoys the camaraderie. "He never meets a stranger."

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Research partially funded by the Louisiana Rice Research Board