Volume 2, Issue 2

May 1, 2005

RICE RESEARCH STATION

Controlling Late Emerging Weeds in Rice

"What herbicides can I use on late emerging weeds or weeds that were not controlled in earlier applications?"

This is a common question and a tough one to answer because of the limited number of products available for use in the late growing season.

I rarely recommend growers use a reduced rate herbicide program or increase the herbicide rate to the higher end of the labeled rate. Reduced rate programs are useful but oftentimes cost more money, because more applications are needed over a growing season. Reduced rate programs often have late season weed problems that cost more to control. The new herbicides labeled in the last five to ten years are not as rate reactive as older herbicide. Therefore, increasing the rate may not increase weed control, but it will increase the costs.

Because weed spectrums in a given field normally do not drastically change from one year to the next, it is important to know the field history. Keep records of weeds in a field from year to year. If a problem occurred in a field one year, a future herbicide program can be selected to manage that problem early and not let it develop into a major problem. In other words, the best late season weed control is a preventative, early-season herbicide program.

All herbicides should be applied early in the growing season at the correct application timing and at the correct application rate. In these economically strapped times, it is tempting to wait to apply 2,4-D for the cost effectiveness of this herbicide. This is a viable option, and one I often recommend. However, if adverse weather conditions occur, as was the case in 2004, the short 2,4-D application window may be missed. If this happens there are few options available to the producer, and the cost of the products increases substantially.

Most herbicides have a window of application from emergence to late-tillering or panicle initiation. Permit is a herbicide that can be applied up to 48 days before harvest; however, Permit is not as effective on large broadleaf weeds compared with an early season application. Storm and Ultra Blazer are labeled up to the early boot stage of rice, but weed size is very important when applying these herbicides late season.

The grass herbicides are labeled up to late-tillering for Ricestar HT and 60 days prior to harvest for Clincher. Clincher has been successful at controlling grass weeds late season; however, it can be inconsistent if it is relied on to control large grasses. If weeds are under drought stress late season, I recommend a shallow flood at the time of application of Clincher or Ricestar HT to obtain adequate control.

Cultural practices can also help in controlling weeds before they become a problem and in many cases may be more economical. Start the season with a clean, well-prepared seedbed. This can be accomplished by tillage or by an effective stale seedbed burndown program. If planting stale seedbed, the first application of a burndown herbicide should be 4 to 6 weeks prior to planting and may require a second application near planting. Plant the correct amount of seed as recommended by the LSU AgCenter to establish a uniform rice stand to outcompete the weeds for water, nutrients and sunlight. A uniform stand can be very effective in controlling weeds such as ducksalad and the perennial grasses. Surface-irrigate the field as needed to prevent drought stress, and establish the permanent flood as soon as the rice is large enough to survive in the water.

Late season weed control can be achieved, but it is often expensive and inconsistent. Research at the LSU AgCenter's Rice Research Station has shown that weed control in the first 3 to 4 weeks after emergence is the most important time to achieve increased yields and prevent late-season weed problems.

Dr. Eric Webster

LSU AgCenter Research & Extension

Southwest Region

Fall Panicum seedling

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Vermilion Rice Field Tour, Klondike Area, July 6, 2005

Southwest LA Rice Tour, Fenton Area, July 6, 2005

Rice Fungicide Timing

Often, the rice producer must rely on fungicides to protect his crop from diseases. Scouting is extremely important to determine which and how much disease is present in a field to determine if a fungicide is needed and which fungicide to use. Scout fields for diseases starting around mid-tillering through heading. Early season sheath blight severity is often a predictor of late season severity and yield loss. Specific fungicide treatment recommendations are based on either percent positive tillers infected or percent positive stops. This threshold is adjusted for the susceptibility of the cultivar. With a sheath blight susceptible cultivar, if 5% to 10% of the tillers are infected or 35% of the stops are positive, a fungicide is necessary. A moderately susceptible cultivar requires 10% to 15% infected tillers or 50% positive stops to justify a fungicide treatment. If leaf blast is present, a blast fungicide should be applied at least at heading. In the past, two fungicide treatments were necessary to reduce sheath blight and blast. But with the advent of more effective fungicides and economic constraints that limit the number of applications, a single application approach is usually used. The best timing for a sheath blight fungicide is during the boot growth stage. Sheath blight fungicides can be applied as early as panicle differentiation and as late as heading. The best fungicide timing for blast control is at heading. Heading applications should occur when 50% to 75 % of the heads are emerging from the boot. Applications 5-10 days after this time cause reduced fungicide efficacy and reduced yields by as much as 100 lb/A per day for sheath blight and blast. Since fungicides are preventative, salvage sprays after significant damage occurs usually do not produce good yield increases because tissue is already killed and yield potential reduced.

Dr. Don Groth

Sheath Blight in Rice

Plan Now for Second Crop

Rice planting has mostly wrapped up, and we hope most farmers are saying, “So far, so good.” It is never too early in the year to start thinking about second, or ratoon, cropping options. The production and harvest of a second crop can potentially increase the productivity per acre in areas such as southern Louisiana where environmental conditions in late summer and fall are often favorable for harvesting a second crop, which develops from the stubble remaining after the first, or main, crop has been harvested.

If a farmer plans to produce a second crop, then that should be considered for every management decision made throughout the entire season. Management decisions for the first crop will in some way affect the second crop. Variety, planting date, fertilization, weed, disease and insect management in the first crop will influence the development and, ultimately, the yield of the second crop.

With narrow profit margins in rice production during the past few years, the interest in maximizing second crop production has increased. The LSU AgCenter recommendation for second crop production is application of 75 to 90 pounds of nitrogen per acre when the first crop is harvested before Aug. 15, or application of 30 to 45 pounds of nitrogen per acre when the first crop is harvested after Aug. 15. A nitrogen rate in the upper end of these two ranges of application rates should be applied if there is minimal field rutting, little or no red rice in the first crop, and healthy first crop stubble remaining after harvest. The nitrogen fertilizer should be applied immediately following first crop harvest, and a shallow flood should be established as quickly as possible. Timing is absolutely critical for the second crop, because the number of available hours of sunlight for growth and development of the rice plants decreases each day as fall approaches.

(Cont. pg.3)

If a farmer plans to produce a second crop , then that should be considered for every management decision made throughout the entire season.

Plan Now for Second Crop (cont.)

In response to farmer concerns about second crop production during the 2004 cropping season, we have expanded our research efforts on second crop rice production. Experiments have been designed that will examine the second crop response of varieties and hybrids to main crop stubble treatments, including flail mowing and rolling. The second crop response to different rates of nitrogen fertilizer applied immediately following main crop harvest will be determined. Second crop production will also be compared in water- and drill-seeded production systems. Other experiments will determine the second crop response of rice varieties to nitrogen fertilizer applied at different timings, to herbicides applied during the second crop, and to harvest desiccants applied three to seven days before main crop harvest.

The goal of the experiments conducted in 2005 will be to add to the knowledge base on second crop development and production and to lay groundwork for future research that could lead to more specific recommendations for second crop production in southern Louisiana.

Read more about LSU AgCenter recommendations in the "Rice Varieties and Management Tips" booklet (LSU AgCenter Publication 2270)

Dr. Jason Bond

Traits of Some Common Rice Varieties in Crawfish Ponds

Questions are often asked about the best rice varieties for crawfish ponds. Options available to farmers are usually dictated by the few varieties carried each year by seed companies. With the exception of the new crawfish-specific rice variety, Ecrevisse, developed at the Rice Research Station, seed companies normally limit their seed stock to a few of the most desirable commercial varieties, based on grain yielding and milling traits. Because improved rice varieties are continually forthcoming as a result of research and breeding programs, the variety selections normally carried by seed companies are continually changing. This makes it difficult and impractical to conduct long-term studies regarding the performance of specific rice varieties under different crawfish growing conditions. Nonetheless, in one recent study at the Rice Research Station, the forage traits of several current commercial varieties were compared in a crawfish pond following the rice harvest. Pirogue (short grain), Bengal (medium grain), Cypress (long grain), CL161 (long grain, Newpath-resistant), Francis (long grain), Cheniere (long grain), and Cocodrie (long grain) were managed for a ratoon forage crop in experimental crawfish ponds. Although any of these varieties could also be planted during the summer for use strictly as a crawfish forage crop, Ecrevisse would be the best recommendation for that purpose. These varieties are planted primarily for their grain production, but are commonly used in rice-crawfish rotational cropping strategies.

There were few exceptional differences among the different varieties, but some trends did appear. (See figure below.) Francis produced the greatest tonnage of forage while Cocodrie produced (Cont. pg.4)

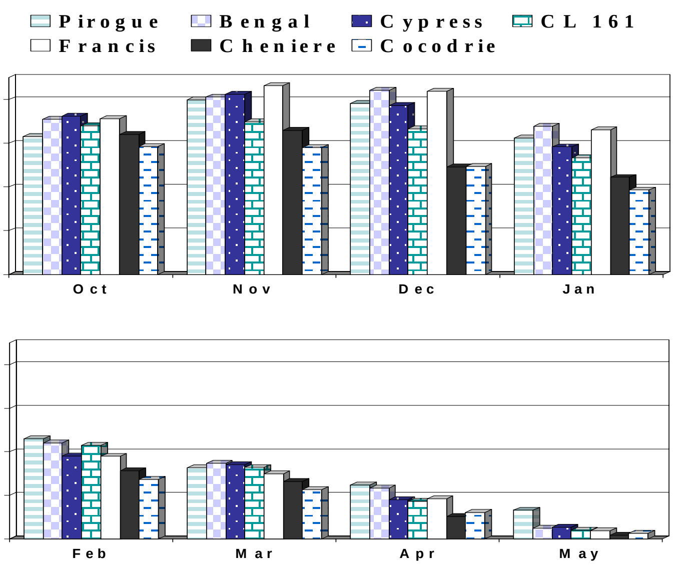

Figure. Total tonnage (lb/A dry weight), by month, for various rice varieties managed as a ratoon crop in experimental rice-crawfish rotational ponds. Total weight included all plant material, both living and dead, and of both vegetative and reproductive (when present) origin. Rice Research Station, Crowley, LA 2004.

Traits of Some Common Rice Varieties in Crawfish Ponds (cont.)

the lowest. Besides Francis, the top three for maximum forage production were Cypress, Bengal and Pirogue. Bengal reached its peak in December, whereas all others had peaked in November and were declining by December. More important than maximum forage production is perhaps forage quantity late in the season. This is often critical to continued growth and acceptable crawfish harvest size. Pirogue and Bengal seemed to have a slight edge in late season forage tonnage. Pirogue was also observed to have the greatest amount of green regrowth after spring warming. Overall, of those varieties tested, Cheniere and Cocodrie seemed to express the least desirable traits in the ratoon forage crop, and Bengal and Pirogue seemed to have a slight edge over the long grains.

Despite these seeming advantages and disadvantages in forage traits, it should be noted that differences in crawfish yield were not examined in this study. It should be further noted that management inputs, such as planting and harvesting date, amount and timing of fertilizer, and water management are likely to impact forage production (and potentially crawfish yields) far greater than variety selection.

In conclusion, given the similar attributes of currently available rice varieties for rotational cropping systems, variety consideration for the crawfish production aspect should be considered only when other management inputs can be optimized.

Dr. Ray McClain

RiceCAP Update...

LSU AgCenter scientists will be participating this year in a multi-state project, called RiceCAP, funded through the U.S. Department of Agriculture. The overall objectives of this project are to identify candidate genes and molecular markers linked to good milling qualities and sheath blight resistance, validate the function of candidate genes associated with these traits, develop training programs and resources to implement these technologies to solve rice problems, and provide educational opportunities for the potential of genomic research.

Direct participations of the Rice Research Station in RiceCAP include developing three mapping populations and carrying out both phenotyping and genotyping to identify DNA markers for sheath blight resistance. A mapping population serves as a platform from which genetic linkage maps can be established and, therefore, is crucial. Though other important agronomic characters might be of consideration, parents of a mapping population must exhibit the greatest possible difference in regard to the trait of interest; the greater their differences, the easier to find markers for the trait.

Two mapping populations for sheath blight resistance (SB2 and SB3) have been developed through anther culture. SB2 was derived from a cross between Cocodrie and MCR010277, while SB3 from a cross between Cocodrie and Chu0066601. Seeds of SB2 and SB3 were increased in the winter nursery in Puerto Rico last fall and will be planted in the field this spring. A set of 25 polymorphic markers for each mapping population have been identified and will be used to verify the mapping populations. One mapping population for good milling qualities (MY2) is being developed through selfing and is currently still at F_4 stage. MY2 was derived from a cross between Cypress and LaGrue. This mapping population will be ready by spring planting next year. These mapping populations utilized Louisiana breeding lines, thus the resulting DNA markers will have direct application in Louisiana breeding program. Markers can readily be used or incorporated into the on-going breeding efforts to select or confirm the trait among advanced lines that have one (or more) of these lines in their genetic background. With the DNA markers, breeders will have the right tools to deal with these two important traits in their cultivar development programs.

Rice Research Station scientists will conduct phenotyping and genotyping for SB2 and SB3. Phenotyping will involve scoring or rating each line in the mapping population for disease severity. Additionally, a set of 150 to 300 polymorphic markers will be used to genotype each line. Disease rating and marker profiling of each line will be used to establish linkage maps and to subsequently identify markers for the trait.

Dr. Herry Utomo

Efforts Must be Made to Minimize the Effects of Outcrossing in Clearfield Rice

The Clearfield System offers, for the first time, the ability to selectively eliminate red rice from a production rice field with the use of an herbicide. However, one major problem with this excellent new technology is the issue of outcrossing. Since red rice and rice are closely related, they can actually cross-pollinate each other. This means pollen from a rice plant can pollinate a red rice plant (or vice-versa). One potential outcome of this cross-pollination would be a resulting offspring plant with weedy (red rice) characteristics that is also resistant to NewPath and Beyond herbicides.

To maintain the viability of the Clearfield System, it is essential to do everything possible to minimize the potential for outcrossing and to eliminate any plants that might result from an outcross event. Remember that these "outcross" plants will typically possess all the characteristics that make red rice so difficult to control and eradicate (shattering, dormancy, etc.). However, they will be immune to the activity of NewPath and Beyond herbicides.

There are a number of recommendations to minimize the potential for outcrossing in a Clearfield rice field. Among the most important of these are:

1) Always use two (sequential) applications of NewPath. This will better allow for the control of any red rice plants that "escape" the first application.
2) If red rice plants remain after the two NewPath applications, consider using Beyond, which can control larger "escaped" red rice plants.
3) If practical, physically remove any "escaped" red rice plants.
4) NEVER plant Clearfield rice two consecutive growing seasons in the same field.

The red rice plants contain the gene for NewPath resistance as a result of an outcross.

Remember that seldom does any herbicide system provide 100% control of any weed. Therefore, it is probably a good policy to assume that outcrosses have occurred in any fields in which Clearfield rice has been grown. Efforts must be made to eliminate any resulting offspring from these outcrosses. How these fields are handled the season following Clearfield rice production may be the most important factor in maintaining the long-term viability of this technology on your farm. Perhaps the best approach is to plant Round-Up Ready soybeans following Clearfield rice. Remember that a weedy rice plant that is resistant to NewPath as the result of an outcross will still be susceptible to other herbicides that control red rice. Many Southwest Louisiana producers may be debating the economic viability of soybeans, especially with the looming threat of Asian soybean rust. However, when one factors in the added benefit of maintaining the ability to effectively use Clearfield rice, the economics of soybean production may be seen in a different light. The worst thing one could do in a field the season after Clearfield rice is nothing. This will allow any resulting "outcross" plants to germinate and mature seed which will certainly exacerbate the problem.

Clearfield technology is one of the most promising breakthroughs in Louisiana rice production in many years. It is up to all of us to make every effort to sustain the value of this technology for our rice growing region.

Drs. Steve Linscombe and Jim Oard

www.lsuagcenter.com/inst/research/stations/rice/

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Rice Field Day

The Rice Research Station Field Day will be held on Thursday, June 30. Field tours will begin at 7:30 a.m. with the last tour departing at 9:45. The speaker program will begin at 10:45 and lunch will be served at noon.

Focus on Research Associates

Doug Walker has worked as a research associate for the LSU AgCenter for 29 years.
He is responsible for growing rice on 500 to 600 research plots at two locations near Bastrop.
Walker was born in Lake Providence and grew up in Bastrop. He graduated in 1975 with a bachelor's degree in agriculture from Northeastern University, now known as the University of Louisiana at Monroe.
Walker said he didn't grow up on a farm, but decided before going to college that he wanted a career in agriculture.

"I wanted to farm but after I started college, I really wanted to get into research," he said.

Walker said he enjoys his job because he's often in the field, working with people he likes. The variety also adds to the job, he said. He keeps records on the research plots, manages water, applies fertilizer, monitors fields for insects and coordinates services of aerial applicators.

Walker works with Dr. Jason Bond, an agronomist, who focuses on fertility and production practices. Dr. Bond said his research is heavily dependent on Walker.

"Doug's diligent work is a valuable asset to the Rice Research Station," Dr. Bond said. "His experience in rice research and willingness to cooperate with station personnel simplifies off-station work."

Bruce Schultz

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Research partially funded by the Louisiana Rice Research Board