



# Texas Rice

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

May 2003 Volume III Number 3

## Best Management Practices for Rice

The term 'Best Management Practices' (BMPs) in agriculture is not entirely new, but after nearly a decade of use, it is still not well understood by many producers and researchers. Part of the problem is that, depending on what state you are in and what commodity you are referring to, the term can take on different meanings.

For example, in a LSU AgCenter publication titled 'Rice Production Best Management Practices' the focus is on water quality. The BMPs described concentrate on preventing agricultural chemicals and sediment from contaminating waterways. Endorsed by the Natural Resource Conservation Service (NRCS), the publication was created in response to federal legislation aimed at preserving water quality - The Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 and the Clean Water Act of 1972.

Section 6217 of CZARA requires states to develop coastal non-point pollution control programs, and devise management measures that conform to those defined by the EPA. Further, Section 303(d) of the Clean Water Act requires states to develop a list of impaired waters that do not meet water quality standards, and estab-



Utilizing water resources efficiently is a critical part of Best Management Practices.

lish a priority ranking for remediation. Total Maximum Daily Loads (TMDLs) must also be established for the listed waters, which indicates how much of a pollutant a water body can receive and still meet water quality standards.

Since agricultural run-off is considered non-point source pollution, the industry is receiving close scrutiny, leading land grant universities to develop recommendations for their producers. And, while protecting the environment is vitally important in Texas, the concept of BMPs is about protecting the farmer's pocketbook as well.

Dr. Jim Stansel, who served as Resident Director of the Texas A&M Research and Extension Center for 17 years, and currently serves as President of the Texas Rice Improvement Association, knows more than just a little bit about the

rice industry in Texas. "Economics have to factor in when you talk about Best Management Practices," explained Stansel, "or else it's a moot point. *Best* has to mean best for the environment and best for the producers." Most often, the two can go hand in hand.

For example, capturing tailwater not only keeps sediment out of our waterways, but it stores a valu-

able and often limited resource for later use. Further enhancing the environment, chemical applications are often reduced by following BMP guidelines. That's because embedded in the BMPs philosophy are the principles of Integrated Pest Management (IPM), such as using economic thresholds to determine when pesticide applications are required to maintain yield potential.

The first time I heard the term BMPs was in a video called "Rice: A Better Way" produced in 1994 by the LCRA, with help from County Extension agents, TAES scientists and farmers throughout the Texas rice belt. The video was the brainchild of Bay City rice farmer Haskell Simon, who wanted to promote the economic and environmental benefits of rice farming to the people of Texas. With help from

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## From the Editor...



The last few weeks have seen rice prices steadily rising. This has had a very positive impact on Texas planted acreage. Given Senator Grassley's continued efforts to weaken the Farm Bill's three-entity rule, the strengthening of rice prices is good news. Acreage forecasts in the rest of the US rice belt are still in flux and may continue to improve over the next few weeks, but estimates suggest most states will experience a 10% to 15% decrease in acreage. Wet winter and early spring weathers over much of the Texas rice acreage has delayed planting, but much of the acreage is now in. Cocodrie is again expected to be the dominant variety planted this year.

Three weeks ago on an early Monday morning, I had the pleasure of attending a water-planning meeting at the Harris County Extension Center with rice producers, members of the Texas Water Development Board (TWDB), and members of the Texas A&M University System. Every five years, Regional Water Planning Groups across the rice belt and the rest of Texas work with TWDB to develop water crop use estimates for the following five years. Producers like Ron Gertson, David Jenkins, L. G. Raun, and Haskell Simon give their time unselfishly and should be commended for their strong leadership and hard work in supporting the interests of the Texas rice industry.

The very next day, Jim Stansel, Jay Cockrell, and I traveled to Houston to attend a Rice Vision 2020 planning meeting. I continue to be impressed by the dedication that our rice producers show in planning and building for the future. The university community sometimes assumes that the direction of information flow and technology transfer is from researchers, to extension specialists, to County agents, to consultants and producers. Time and again, this paradigm has proven to be only partially correct. While a significant amount of information definitely flows this way, a considerable amount also flows in the opposite direction. In many cases, farmers do their own research to adapt or adopt methods or technologies developed by University and USDA scientists to

their specific growing conditions. In other cases, producers take the lead in the development and implementation of previously unproven production methods. A case in point is the increasing use of limited tillage and continuous cropping in rice. In response to producer leadership in this area, large-scale long-term limited tillage-continuous production systems will be established at Beaumont and Eagle Lake for the 2004 season. Limited tillage systems offer potential advantages of reduced weed management costs, while back to back rice would help to reduce land rental and land ownership costs.

As I write this editorial, I am sitting in an airport with Dante Tabien in Little Rock, Arkansas, having just returned from two days of visits with scientists at the University of Arkansas Rice Research Center. The purpose of our trip was to meet with Dr. Karen Muldenhoer and Dr. James Gibbons, University of Arkansas rice plant breeders. Karen and James were extremely generous with their time, showing us all aspects of their breeding program including how they do their initial crosses, how they maintain field populations, and the criteria they use in selection promising lines for future testing and possibly commercial release. Karen and James were also extremely generous in sharing their advanced breeding lines with Dante. Having access to this material is worth several years of work. A few weeks back, Dante and I also traveled to the LSU Crowley Rice Center, spending an entire day with Steve Linscombe and Qi Ren Chu. Steve and Qi Ren were similarly very generous with their time and their rice lines. Closer to our doorstep, Dante continues to work with Anna McClung to learn the ropes of the USDA rice breeding program. I have been extremely pleased to see how freely each of these individuals have given time and varietal material to getting Dante's program off the ground and up to full speed.

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# Farming Rice

## a monthly guide for Texas growers

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

### Reducing Costs through Innovations in Fertilizer and Water Management

With the aim of reducing production costs for rice farmers, Drs. Fred Turner and Garry McCauley conducted a study in 2002 that involved innovations in fertilizer and water management. Using the variety Cocodrie, the study evaluated the difference between early flood (4-leaf) and standard flood (6-leaf), as well as pre-plant nitrogen application vs. 3-leaf (with standard flooding) or 4-leaf (with early flooding) nitrogen applications. Plots were evaluated at Beaumont (heavy clay) and Eagle Lake (sandy loam).

Results from the 2002 study showed that flooding at the 4-leaf stage and the associated N management reduced production costs by an estimated \$37/acre (i.e. less herbicide, two fewer flushes, 16% less irrigation water, improved N uptake efficiency and only two N applications.) Early flood also provided 3 to 5 days earlier maturity and 2.5% higher whole grain milling at both locations.

In addition, flooding clay soils at the 4-leaf stage appears to allow the option of delaying the first N application until pre-flood rather than at pre-plant or 3-leaf stage without reducing yield. This would allow producers to apply P and K if needed in the fall or early spring and not deal with N fertilizer application until just prior to establishing flood, saving valuable time when farmers are trying to get all their rice planted. However, flooding at the 4-leaf stage tended to suppress grain yields on the sandy loam at Eagle Lake while enhancing growth and grain yield on clay soil at Beaumont.

If producers choose to go with the standard flooding at the 6-leaf stage, the study showed under the dry spring conditions of 2002, significant yield increases by applying pre-plant N rather than waiting until the 3-leaf stage at both Eagle Lake and Beaumont.

Results from this one-year study suggest flooding at the 4-leaf stage may be best on clay soils while flood-

ing at the 6-leaf stage may be best on lighter soils. Another possibility for sandy soils may be to flood early and temporarily drain at mid-season. This might allow oxygen to penetrate the soil and alleviate anaerobic conditions detrimental to plant growth. Research is needed to determine the validity of this hypothesis.

On a related topic, Dr. McCauley is conducting a study this year to evaluate water management and its effect on ratoon crop yields. Previous work indicated that the timing of draining the main crop for

harvest, and subsequent flooding of the ratoon crop had a significant impact on the milling yield of the ratoon crop. Earlier studies were conducted using the varieties LaBelle and Lemont, so the TRRF Board requested additional studies using newer varieties. Look for more information on this in the July issue. \*

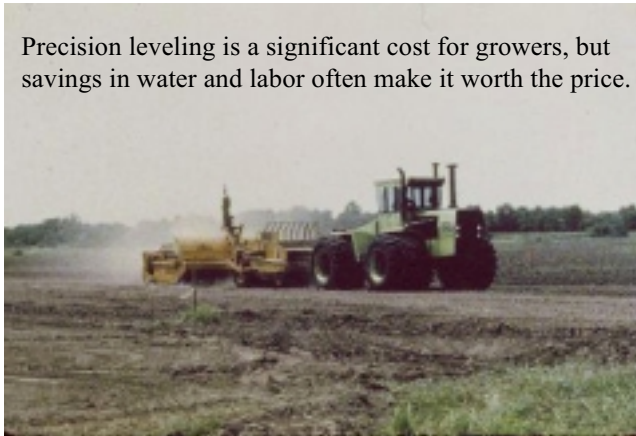


This photo shows rice plants grown on the heavy clay soils in Beaumont. The plant on the left was taken from plots flooded early, at the 4-leaf stage, while the plant on the right came from plots flooded at the standard 6-leaf stage.

*To receive a copy of the 2002 end of year report on "Reducing Production Costs through Innovations in Fertilizer and Water Management" contact Fred Turner at 409-752-2741 ext. 2223.*



Precision leveling is a significant cost for growers, but savings in water and labor often make it worth the price.



the Natural Resources Foundation of Texas and the Lower Colorado River Valley Federation, the video and accompanying curriculum was distributed to 800 science teachers across the state. According to Rusty Ray, LCRA supervisor of natural resource conservation programs, the curriculum incorporates information from the video, which demonstrates best management practices for growing rice. “The lessons, designed for students in grades six through twelve, are correlated to state learning requirements listed in the Texas Essential Knowledge Skills (TEKS),” said Ray, “It’s a different way to help students meet basic educational requirements, and in the process they learn about the rice farming industry and that rice is a crop that benefits the environment.”

Since Texas is a major flyway for migratory waterfowl, there is no doubt that rice farming provides valuable habitats for feeding, breeding and winter shelter. To help farmers get the most from their acreage, while at the same time preserving our valuable resources, the following Best Management Practices are encouraged.

### Site Selection

Because rice is grown under flooded conditions, fields should be chosen that are relatively level to begin with, reducing the number of levees required with a minimum amount of land forming. Also, the soil profile should be such that the fields can retain permanent floodwaters necessary for rice production. This requires heavy clay soil, or a clay hardpan below a layer of sandy loam.

### Land Preparation

Laser leveling has become widely practiced in the past decade, and most farmers find that it is well worth the investment. Laser leveled fields require fewer levees, and can maintain a uniform, shallow flood – which reduces water cost, while promoting a greater uniformity of crop growth. Some producers prefer to water level their fields when the laser equipment is unavailable or cost prohibitive. This technique is used extensively in Louisiana and in parts of Texas. Water is held on the field, and a soil scraper is used to move dirt around as the water level indicates high spots. If extensive dirt moving is needed, it is recommended that farmers do the water leveling in the fall, and hold the floodwater through winter to allow the sediment to settle before releasing the water. If water leveling is done in the spring, growers should hold the water for at least 15 days, or until 50% of the sediment has settled out.

Buffer strips of perennial vegetation bordering fields are an effective means for keeping soil where you want it, and not in the waterways. This is particularly important for fields that border streams, ponds and lakes.

### Water Management

As water resources in Texas become more limited and expensive, farmers must use every available technique to conserve this valuable resource. As mentioned



Using multiple inlets decreases the time it takes to move water across a field, and for growers that have high sodium levels in their irrigation water, it reduces salt buildup at the top end of the field.

## BMPs continued...

before, precision-leveled fields allow for shallower, more uniform flooding, but there are other ways to save and conserve water.

One method utilizes holding ponds to capture winter rains that can then be used throughout the summer for irrigation. Another is the construction of tailwater collection reservoirs, whereby when fields are drained in preparation for harvest, the water is captured and used again for the ratoon crop, or next year's spring flooding.

Grassed waterways are another way to preserve water quality and prevent erosion. Channels are constructed, graded, and established with suitable vegetation to provide a stable conveyance of run-off water. The waterways reduce erosion, flooding and improve water quality.

The use of multiple inlets has also been shown to have many benefits for producers. The fields can be flooded more quickly and in a uniform manner. Nutrients are not washed out from the tops of the cuts, and salt build-up from well water is not concentrated in one area.

Holding flood water for the recommended time is also important for getting the most for your chemical dollar, and reducing pollutants that may end up in streams or groundwater.

### **Tillage Practices**

Reduced tillage techniques have become more popular over the past ten years, as producers strive to become more efficient and environmentally conscious. No-till means planting into previous crop residue or native vegetation with minimal soil disturbance. Reduced tillage usually means the seedbed is tilled in the fall, and then native vegetation is established throughout the winter months. In both cases, herbicides must be applied to burn down vegetation prior to planting. But increased herbicide use is weighed against the advantages of soil stabilization and erosion control, along with the possibility of earlier spring planting and less weed pressure later in the season. This is especially important in years with excessive spring rains that prevent growers from getting fields worked in time for early planting.

### **Chemical Applications**

As mentioned before, BMPs embrace the concepts put forth in Integrated Pest Management. Producers should scout their fields regularly, to monitor pest



Chlorophyll meters are an accurate way to test plant health and determine fertilizer needs. Two drawbacks are that the equipment is still cost prohibitive and readings must be calibrated according to variety.

populations and determine when pesticides are absolutely necessary to achieve optimum yield. The *Rice Production Guidelines* set economic thresholds for all rice pests and should be followed closely to avoid over use of pesticides. Often times, pests appear in fields in numbers that either will not cause economic damage, or will easily be controlled by natural predators. Furthermore, careful scouting may reveal 'hot-spots' of infestation that can be treated separately, without wasting money on chemicals to treat the entire field.

For chemicals applied by air, great care should be taken to assure that drift will not contaminate adjacent waterways or public areas. Farmers need to verify that aerial applicators follow label directions regarding environmental conditions such as wind speed, to prevent widespread drift. Not only will this contaminate sensitive areas, but it means less of the chemical is actually reaching the target area, which leads to reduced control of the target pests.

When applying chemicals by ground rigs, watching wind speed and direction is still very important. Further, growers should take care to load chemicals in an area where accidental spills will not lead to groundwater contamination, such as near wellheads. Air gaps should be maintained while filling spray tanks to prevent back-siphoning and contamination of the water source. Chemical storage is very important, and regular maintenance checks should be performed to assure

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## BMPs continued...

that leakage is not occurring. Containers should be rinsed according to label directions and disposed of properly. Machinery should be well maintained and calibrated to insure that the proper amount of chemicals are being applied.

Select chemicals carefully, and always consider the least toxic solution first. For example, biological products such as *Bacillus thuringiensis* (Bt) are very effective in controlling caterpillars such as the fall armyworm, but do not harm other non-target insects, fish, or wildlife. Dow released a new product this year that has been approved for caterpillar control in soybeans and wheat, and hopefully will soon have a label for rice. It is a powerful bioinsecticide made by fermenting the bacteria *Saccharopolyspora spinosa*, and like Bt, will not harm non-target insects or the environment.

Fertilizer recommendations for different varieties should be followed closely and plants carefully monitored. Putting out too much nitrogen or applying it at the wrong time not only wastes money, but increases the chance of nutrient buildup in waterways - which can lead to algae blooms that are detrimental to fish, crustaceans and other aquatic invertebrate species. Also, nitrate contamination of groundwater has been associated with health problems in humans. Too much nitrogen is not good for the rice crop either, as it can lead to lodging and disease problems. Growers are therefore encouraged to submit soil tests regularly, at least every three years, and apply only the recommended rates of fertilizer. Chlorophyll meters are also useful in determining when a crop is in need of nitrogen, but for individual farmers this option may still be cost prohibitive. One solution might be for growers to go in together on the purchase of a meter, or for grower cooperatives to buy the meters and share them among members.

If the equipment is available, growers are encouraged to use animal manures and organic materials when it is economically feasible to improve soil tilth, water holding capacity and soil structure. This is an effective way to recycle nutrients that might otherwise become waste products, and it can reduce the need for chemical fertilizers.

### Overall Farm Management

Water wells should be protected from chemical spills and accidental contamination. Water sources,



Dr. Garry McCauley conducted research in 1992-93 that indicated water is often cleaner coming out of a rice field than it was going in when BMPs are used.

well or surface, should be tested at the beginning of each year for salinity and chemical contamination.

Fuel storage tanks should be periodically checked to insure that leakage is not occurring. Above ground tanks should have a secondary containment in case of accidental spills, and all gauges and fittings should be monitored closely. Tanks should be located at least 40 feet from buildings, and 150 feet down slope from surface water or wells. Used oil, grease, batteries, tires, pesticide containers and paint cans should be stored properly until they can be disposed of or recycled.

When you study the list of Best Management Practices recommended for rice producers, it becomes clear that doing the right thing for the environment most often provides economic rewards for the farmer as well. These include cost savings on chemicals, fertilizers, water and labor – not to mention the health benefits that provide long-term advantages for producers, their families and their workers. \*

*For more information on BMPs for rice, please refer to the 2003 Rice Production Guidelines available from your county extension agent, or call the Beaumont Center at 409-752-2741. Producers should also reference back issues of Texas Rice at <http://beaumont.tamu.edu/> to review the article on combine harvesting efficiency in the October 2001 issue, and the IPM article in the September 2001 issue.*

# Municipal Waste Recycled Into Fertilizer

**M**unicipal waste from the city of Houston is marketed as fertilizer by Synagro, a NASDEQ listed company that operates in 40 states nationwide. Synagro in turn sells some of the product to a company out of Bay City called Bonus Crop, who bags and distributes the material, labeled as Houactinite, to nurseries and home centers. They also market to golf courses for use on greens and fairways. Different grades are available, depending on the particle size. Vital-Cycle is a division of Synagro, and serves to distribute ag grade material to farmers and ranchers. The ag grade product is not screened, so that pellet size is not uniform. Within a 70-mile radius of Houston, they will transport and spread the fertilizer for around \$35/ton, with a 22-ton minimum order for deliveries. Producers further out can get the material delivered, but an extra charge would be added to cover transportation costs.

Houactinite or Vital-Cycle (same basic material but different trade names depending on which company you buy it from) comes from 2 site-specific plants in Houston that receive only residential and restaurant waste. This reduces the problem of high heavy metal concentrations that you would find in industrial waste products. The product is strictly regulated by the Environmental Protection Agency and the Texas Commission on Environmental Quality. Samples must be taken from every batch produced and tested for heavy metal and pathogen concentrations.

Pathogens are eliminated by a multi-step process that begins with microbial decay, and ends with the material being heated to 1200 °F to eliminate any remaining microorganisms.

Municipal waste treatment is a costly endeavor, and the end product most often ends up in landfills.



The heat dried bio-solid pellets provide a slow release 6-2-0 fertilizer, with 35% organic carbon. The carbon and accompanying organic matter provide a rich source of food for beneficial microorganisms in the soil.

Des Woods has used the product for the past 4 years, and has achieved some very promising results. “Before the GPS systems came along with yield monitors on the combines, we had no idea just how variable grain yield could be within the same field,” said Des. The worst areas are those that are heavily cut when the fields are precision leveled. This is because you essentially scrape away all the living soil, exposing sterile subsoils that have no biological activity. In 4 years of on-farm experience, Des has made the following observations:

1. On rich, healthy soils, cut areas benefit from 1000 – 2000 lbs/acre, but applying the material to fill areas causes more harm than good. Plants will put on too much vegetative growth, which is detrimental to grain yield.
2. On poor, sandy soils the material may be applied generously to cut areas and lighter throughout the rest of the field with good results.
3. Regardless of the soil type, regular fertilizer programs should be followed uniformly throughout the field. In other words, the Vital-Cycle is a supplement to your fertilizer program, not a replacement.
4. There appears to be residual benefits the following year, making back-to-back production a possibility.
5. Ideally, the material should be applied between the first of December and the end of January. Since it is slow to release, if you apply it just before planting you may not see a benefit until the ratoon crop.
6. Provide the spreader trucks with maps indicating cut or low-yield areas to insure applications are made in the right place at the correct rate.

According to Bill Kahla, marketing manager for Vital-Cycle, over 40,000 tons of waste per year is diverted from Houston area landfills and recycled back into the environment, providing immeasurable benefits to farmers, ranchers and the general public. \*

#### Contact Information:

*Vital-Cycle in Bryan, Bill Kahla,  
Office 979-823-0417, Cell 713-202-8050  
Bonus Crop in Bay City, Office 979-245-4825*

# Farmer Check-off Money Funding Research in 2003

As reported in the April issue of *Texas Rice*, the Texas Rice Research Foundation granted \$599,178 in grower check-off monies in support of rice research for 2003. This article is the first of three that will highlight the projects funded, providing producers with details of the work to be conducted this year.

## **Development of Improved Rice Cultivars Anna McClung – \$102,000**

Development of improved cultivars impacts all aspects of the rice industry and is an important delivery system of new technology. The objective of the rice breeding program is to develop new cultivars that meet the diverse needs of producers and the industry and will help sustain rice production in the southern U.S. The majority of the breeding program's effort is focused on the development of conventional long grain rice.

Additional limited effort is directed towards the development of cultivars that have added-value or can be used in specialty markets. Other areas of fundamental research include developing molecular marker assisted selection techniques and evaluation of diverse germplasm for traits that can enhance the U.S. rice gene pool.

The breeding project utilizes an extensive field testing program, summer and winter breeding nurseries, disease screening nurseries, and through cooperative efforts, grain quality and genetic marker evaluations. Funding requested for the breeding program operations essentially is used to support labor (permanent TAES staff, part-time student workers, overtime costs of TAES staff during peak harvest and planting periods) and rental costs for the Puerto Rico winter nursery facilities. Other labor support, equipment, supplies, and facilities costs are covered by USDA-ARS and TAES.

## **Development of High Yielding, Good Quality, Disease, Insect Resistant, Herbicide Tolerant Rice Varieties – Rodante Tabien – \$60,000**

Breeding rice varieties takes 7-10 years, thus continuing efforts to establish populations for selection should be planned ahead. This planning should consider both the farmers and consumers demand for cer-

tain traits and quality. Yield and grain quality have been the basic criteria for variety adoption and other traits like pest and disease resistance follow. Among the traits desired by farmers is herbicide tolerance, which has not been incorporated in Texas released varieties.

Weeds are a perennial problem to farmers in all rice production areas in Texas and US in general. Weeds can reduce yield and quality by 17% compared with about 8% and 7% for insects and diseases, respectively. Losses due to weeds were estimated at 34% in Texas, 12% in California and Missouri, and 17% in Arkansas, Louisiana and Mississippi, valued at \$269 million in 1983 (Chandler, 1984). Thus the release of herbicide tolerant varieties has been a big relief to farmers, especially for the control of red rice.

Mutation breeding has been useful in generating important genetic resource. It has been used to develop herbicide tolerant crops. Among the mutagenic agents, EMS (ethyl methane sulphonate) and MNU (methyl-nitrosourea) have been the popular chemicals to generate mutants not only in rice but also in other crops, thus will be utilized in the proposed studies. The mutants that will be generated will be used in the development of new rice varieties and the improvement of elite lines and popular varieties through the incorporation of herbicide tolerance.

The evaluation of germplasm and generation of herbicide tolerant accessions and mutants will be done during the first two years of the project, as this is the first step in a crossing program aimed at developing varieties with herbicide tolerance. Thus the earliest backcrossing and single cross for generation of populations may commence in the second year.

## **Direct Manipulation of Yield Determinants in Rice – William Park – \$5,200**

Until recently, most of the work in the Biotechnology lab has focused on DNA marker technology. We developed markers for the blast resistance genes Pi-b, Pi-k, and Pi-z as well as for cooking quality. These markers have been transferred to the breeding program at Beaumont and are becoming routine breeding tools. We have also used DNA markers to examine red rice in Texas and to test many of the crosses made at Beau-

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## Check-off funding continued...

mont to identify accidental selfs and to make sure the parents are correct.

My lab has now started to go after bigger game using a fundamentally different strategy. The field of “genomics” has entered a period of explosive growth in animal, microbial, as well as plant systems. While most of the work in plants thus far has centered on Arabidopsis, rice has emerged as the model system for cereals. As a result, rapidly increasing amounts of information and increasingly sophisticated tools are becoming available.

Hundreds of millions of dollars are being spent annually on plant genomics in public and private programs worldwide. However, university and government programs are typically focused on attracting federal grant dollars and biotechnology firms are increasingly motivated by intellectual property and profit rather than on serving the traditional interests of US agriculture.

Since the Texas rice industry is relatively small, none of the major players are focused on using this technology to improve the competitive position of the Texas rice industry relative to that of our domestic or foreign competitors.

The focus of our current work with TRRF is thus to ask how, on a very limited budget, we can take advantage of the flood of information and technology in the field of genomics to do things that are of direct practical value, but which are of more value in Texas than in other rice producing areas.

As outlined in our proposal last year, there is good reason to believe that we can increase the ratoon yield and total yield of rice in Texas by directly manipulating genes involved in remobilization of nitrogen such as glutamine synthetase. If successful, this could provide the Texas rice industry with a direct competitive advantage over other rice producing regions.

During the last year, we developed the technology to introduce foreign genes into commercial rice varieties such as Cypress and Cocodrie and we also made our first construct using a cystolic glutamine synthase gene.

We are thus ready to move from talking about ideas to actually altering the expression of key genes in Texas commercial varieties and then testing the effects on yield, ratoon yield, and nitrogen metabolism.

### **Evaluating University & Private Industry Varieties for Production in Texas** **Fred Turner - \$46,000**

This project addresses three TRRF Board research priority areas — production practices for varieties, improved ratoon crop and reduced unit cost of production. The proposed research evaluates weak and strong points of potential or released varieties from the university rice breeding programs in Arkansas, Louisiana, Mississippi and Texas as well as potential varieties from RiceTec and herbicide resistant Clearfield varieties from Horizon Ag.

In field plots near Eagle Lake and Beaumont, potential and released varieties will be evaluated for seventeen agronomic traits including main crop and ratoon crop yield response to two seeding rates (plant populations) and two N rates. The study will evaluate the effect of delayed planting on a variety’s main crop yield while providing data useful in determining and refining DD-50 data for potential and commercial varieties.

The information generated by this research will help screen 10 to 14 varieties or potential varieties for Texas rice producers by providing an economic index of a variety’s main and ratoon crop performance (yield and milling). The data collected through the proposed research will also be used to illustrate principles of plant physiology rice farmers can use to manage rice varieties for lower unit cost under conditions encountered in commercial rice fields.

The data will help provide information for a package of recommended practices for maximizing main and ratoon crop income. Data will be collected related to stand establishment, plant population, variety-specific nitrogen fertilizer management, days to heading and maturity, milling yields, lodging, and planting date influence on variety performance.

Obtaining this data requires establishment of at least 180 treatments (i.e. 40 main and 40 ratoon crop treatments at 2 locations plus 10 delayed-planting main crop treatments at 2 locations). This research will provide farmers with the necessary information to make informed rice production decisions, as variety selection is one of the most important decisions a rice producer makes. \*

# “Texas: The State of Water” Video Documentary Airs May 29

Will Texas run dry? Can other Texas regions learn from the cautionary tale of the over-taxed Rio Grande? How can the state provide enough clean water for wildlife and the environment, as well as for cities, industry and agriculture?

These are some of the questions explored in “Texas: The State of Water,” a one-hour video documentary to air the evening of Thursday, May 29 in more than 30 Texas cities.

For the first time, the Emmy Award-winning Texas Parks & Wildlife television series is teaming with KERA-TV in Dallas to produce original, prime-time programming that will air on all 13 Texas public TV stations on the same night.

The documentary is supported with sponsor funding from Brazos Mutual Funds through the Parks and Wildlife Foundation of Texas and by public television viewers. It is being produced in the new high definition video format using KERA equipment.

Lead vocalist Ray Benson of the Grammy-winning western swing band *Asleep at the Wheel* will narrate the documentary. Co-producer and freelance photographer Curtis Craven traveled across Texas to shoot the project with KERA equipment. Richard Roberts, TPWD media productions director, co-produced it and wrote the script. Rick Thompson, KERA local production director, helped guide the production.

The documentary includes segments involving El Paso, Caddo Lake in East Texas, the Ogallala Aquifer in the Panhandle, the Pecos River area in West Texas, and the Colorado and Trinity River watersheds involving Dallas/Fort Worth, Austin and Houston.

The program also focuses on the once mighty Rio Grande as a case study to show how, if care is not taken, rivers can stop flowing. The Rio Grande has intermittently ceased flowing into the Gulf of Mexico in re-

cent years, and today in many areas there is little or no water in the riverbed.

“Water is the single most important factor for the future of people and wildlife in Texas, period,” said Robert L. Cook, TPWD executive director. “Water is a finite resource that will only get stretched farther as our population expands. There is still time now to plan for a future with enough water for people and wildlife.”

“Texas: The State of Water” is part of a broader public information initiative from TPWD that began with a special issue of Texas Parks & Wildlife maga-



White egrets are a common sight throughout the Texas rice belt.

zine devoted to water issues in July 2002. The initiative also includes radio, Internet and other components, including publication of *Texas Rivers*, a book by John Graves with photographs by Wyman Meinzer. Another special issue of TPWD magazine devoted to water resources is planned for July 2003.

“We’re trying to make people aware that what happens to water resources

in one area may have profound impacts on water and wildlife in the next county or across the state,” said Lydia Saldaña, TPWD communications director. “We hope the joy we all share in fishing, paddling, birding, hunting and all the outdoor pursuits that depend on water will inspire Texans to get involved in conservation.”

Texas: the State of Water is a high definition co-production of TPWD and KERA-TV/Dallas. Check your local PBS TV schedule to verify the airtime in your city. \*

*For those outside of the viewing areas, copies of the video will be available from the TPWD by request. For more information call Tom Harvey at 512-389-4453 or email [tom.harvey@tpwd.state.tx.us](mailto:tom.harvey@tpwd.state.tx.us).*

# State, National and International News...

## **GROUNDWATER CONSERVATION DISTRICT SEMINAR**

College Station - Groundwater district managers, landowners and others will have the opportunity to learn how to buy, sell and export Texas groundwater at a seminar on May 28 at the George Bush Presidential Conference Center in College Station. The program will be telecast to Texas A&M University Agricultural Research Centers in San Angelo, Uvalde, Amarillo and El Paso.

The meeting begins at 1 p.m. and has two purposes, said Ronald Kaiser, a professor at Texas A&M University, whose specialty is water marketing, law and policy, and who is one of the conference organizers and speakers.

The first purpose is to inform landowners about opportunities for selling and leasing the water under their land and how to protect their interests. Speakers will address what to consider when marketing the water below their property. The second purpose is to inform groundwater conservation district board members, managers and citizens about regulations governing the exportation of groundwater and the fees that can be charged for water export.

"Buying and leasing water is not a new idea," Kaiser said. However, in the last five years, cities have increasingly sought groundwater from rural areas and move it to growing population centers. It is a hot topic, and, "the water pressure's up," he said.

Registration for the conference, for both on-site and teleconference participation, is \$55. After May 16,

the fee goes up to \$75. To register contact Jacque Hand, Texas A&M Special Events Center Operations, P.O. Drawer H1, College Station, TX 77844, telephone 979-845-7692. Register online at <http://texaswater.tamu.edu>.

## **LATE SEASON RICE**

USRPA *Rice Times* - Planting Hybrid Rice in May or June can be very profitable, especially compared to soybeans. Research has shown that good profits can be made with hybrids planted late in the season, especially when your cash flow is aided by deferring your hybrid seed costs until after harvest.

University of Arkansas Crop Systems Agronomist, Dr. Merle Anders, has researched rotations with rice, wheat & soybeans and produced rice yields as high as 8153 lbs/ac. Several crop rotation systems produced hybrid rice yields ranging from 5676 to 8153 lbs/ac and averaging 6869 lbs/ac in 2002 tests. Economic analyzes of production inputs are being finalized, but appear to be very favorable for planting RiceTec hybrid XL7 in late season planting scenarios.

In recognition of today's challenging farm climate, RiceTec has introduced a "Grain for Seed" Deferred Payment Plan for their hybrid rice seed costs when planted late in the season. This will help rice growers capture the profit potential available to them today through hybrid rice.

To get more information about RiceTec's new Deferred Payment Program, call Jim Thompson toll free at 1-877-580-7423.

## **INTERNATIONAL YEAR OF RICE**

USA Rice Federation *Daily* - At their invitation, USA Rice met with United Nations' Food and Agriculture Organization representatives to discuss plans for promoting rice worldwide next year. With 2004 as the FAO's International Year of Rice, they are seeking partnerships with interested organizations and companies to help get the word out on the positive contributions of rice around the world serving as a food staple for half of the world's population, as an employer of hundreds of millions of people, and as a positive impact on the environment.

For more information contact John Mentis at 703-236-1474 or email [jmentis@usarice.com](mailto:jmentis@usarice.com).

## **APPLE SNAIL WEBSITE**

A web resource is available for those interested in learning more about the channeled apple snail at [www.applesnail.net](http://www.applesnail.net). The site has descriptive photos, as well as information on the snail's life cycle, eating habits, reproduction and range of habitats for dozens of species worldwide.

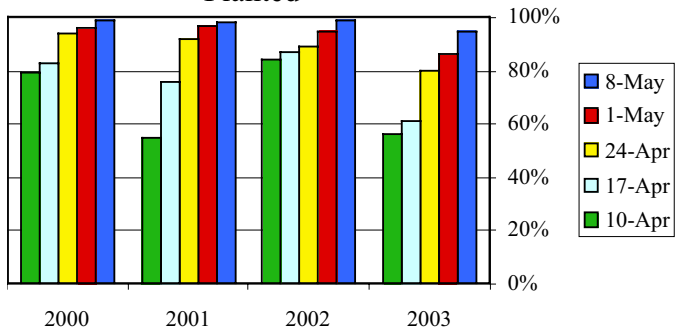
An interesting adaptation of apple snails is the branchial respiration system comparable with the gills of a fish to breathe under water. They also have a lung to respire air. Producers are encouraged to visit the website and familiarize themselves with the appearance of the various species and their characteristic egg masses. Any sightings should be reported to Dr. Mo Way at 409-752-2741 ext. 2231. \*



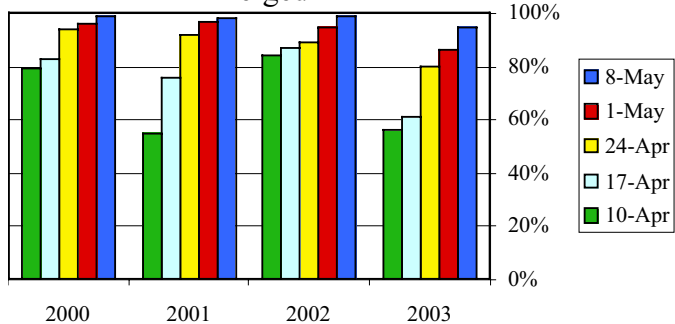
# Rice Crop Update

As of May 8th, 95% of the Texas acreage is planted, and 83% has emerged. In spite of a slow start this spring, 17% of the acreage is already in permanent flood, about one week behind 2002.

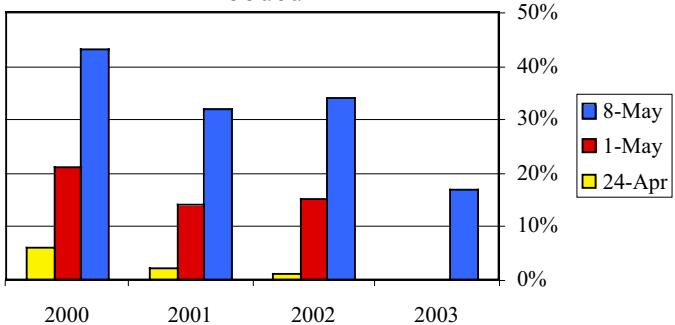
Planted



Emerged



Flooded



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Access back issues of *Texas Rice* at  
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*Texas Rice* is published 9 times a year by The Texas A&M University System Research and Extension Center at Beaumont. Interviews, writing and layout by Jay Cockrell. Editing by Ted Wilson, Jay Cockrell and Tammy Tindel. Additional support by Jim Medley and Robin Clements. Information is taken from sources believed to be reliable, but we cannot guarantee accuracy or completeness. Suggestions, story ideas and comments are encouraged.

## From the Editor continued...

During the next several months, Dante and I plan to visit the Missouri and California rice varietal development programs. Each program has their own tricks of the trade that improve how they do their business of developing new rice varieties. Being able to work closely with Anna and the state rice breeders shows the positive and close-knit nature of US rice breeders, and a common interest in improving the economic well-being of the US rice industry.

I hope you enjoyed this issue of *Texas Rice*. I also hope you will continue to send us your ideas and suggestions. Also, be sure to visit our new web site at <http://beaumont.tamu.edu>, where you can obtain the latest copies of *Texas Rice*, and an increasing amount of information on rice production and management.

Sincerely,

Ted Wilson  
 Professor and Center Director

## Mark Your Calendars to Attend Rice Field Days in Texas!

Texas A&M Station/Eagle Lake - July 1 (PM)

RiceTec - July 1 (AM)

Garrett Farms - July 8

Texas A&M/USDA Center Beaumont - July 10

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