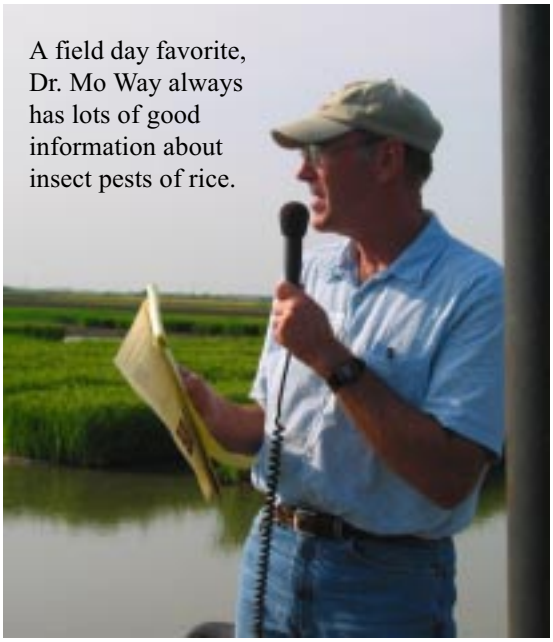
Texas Rice

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

June 2005 Volume V Number 4

31st Annual Rice Field Day at the Eagle Lake Station



A field day favorite, Dr. Mo Way always has lots of good information about insect pests of rice.

The 31st Annual Rice Field Day at the Eagle Lake Research Station will be held Tuesday June 28th starting at 4:00 pm. The 65 acre facility is located on FM 102 between Eagle Lake and Columbus.

With all the new varieties and production technology, farmers and other industry representatives are encouraged to come and learn the latest information in rice research from Texas A&M and USDA scientists. Field Day activities will begin with a tour of the research plots on covered trailers to provide some shade from the hot Texas sun.

Speakers will include Dr. Garry McCauley who will discuss management for the ratoon crop, including main crop cutting height and methods to reduce stubble height.

Dr. Mike Chandler will share his research on aerial applications of Command herbicide as well as important considerations in red rice control systems.

Dr. M.O. Way will discuss insect pests in both main and ratoon crop and will also provide information on Icon seed treatment alternatives.

Mike Jund will give an overview of fertility requirements and ratoon potential of both conventional and hybrid varieties.

The evening meal and program will follow the field tours and will begin around 6:30 pm. The dinner is courtesy of BU Growers, a limited partnership business specializing in seed rice production, drying & storage, and rice brokering. Based in Bay City, the company has sponsored the Eagle Lake and Beaumont field days since they opened for business in 1989.

The evening program will feature State Representative Robby Cook with an update on important water issues and legislation. Robby is a fourth generation rice farmer, born and raised in Eagle Lake. Now in his fourth term in the Texas House, Robby has been a champion of Texas farmers. He served on the Joint Interim Committee on Water Resources, and has a clear understanding of critical water issues facing the state of Texas.

Ronald Gertson will present land leveling ideas and options to make EQIP funding more beneficial. Ronald is a fourth generation farmer, and part of a family partnership in Wharton county. He has served on the Regional Water Planning Group for the Lower Colorado River Authority and has extensive knowledge regarding government programs.

Nathan Childs is a senior economist with the USDA's Economic Research Service, who specializes in rice. He will provide an update on the supply and production stock levels.

And of course, there will be opportunities throughout the afternoon for producers to ask questions of scientists conducting research at the Eagle Lake Station.

Continuing Education Unit (CEU) hours will be given to those who participate in the field tour. Anyone interested in rice research and production is encouraged to attend.

For more information contact Coleen Meitzen at (979)234-3578 or Brandy Morace at (409)752-2741 ext 2227.*

From the Editor...

Welcome to the June Issue of *Texas Rice*. This issue provides an overview of conservation tillage and some of its benefits to farmers. Conservation tillage from a rice production perspective can make good business sense. Limited till rice farming, in particular, has the advantage of providing a firm soil surface, which allows a producer to get equipment into the fields earlier in the season. Except during extremely cool springs, early planting allows the crop to start growing sooner and begin to mature before the high temperatures of late-July and August. High daytime and nighttime temperatures have a detrimental impact on rice growth, development, and yield. As temperatures reach the high 80's and low 90's, the rice plant begins to respire (breath) more quickly, in the process using a greater amount of energy to keep cool, resulting in less energy for production of the grain crop. Previous research conducted at the Beaumont Center shows a 300 to 500 lbs/ac disadvantage for every week a rice crop is planted after April 15.

Limited till rice farming on most soils also reduces water loss from the soil surface, which means a producer can plant into moisture, reducing the need for at least one early season flush and sometimes, two flushes. With increasing water and pumping costs, limited tillage conservation farming makes good business sense for rice producers.

This past Saturday night, I had the opportunity to attend a town hall meeting organized by Judge Carl Griffith, to discuss the potential for ethanol production in Southeast Texas. John Johnson, an attorney from Carl Griffith's office, provided an informative presentation about the history of ethanol production in the U.S., and current approved and pending federal and state legislation that could promote the production of ethanol from agricultural crops. During his presentation, John described a proposed pilot study by researchers from Lamar University and the Texas A&M University System, Agricultural Research and Extension Center at Beaumont, which, if funded, would determine the economic feasibility of producing ethanol using sugarcane and rice.

The final message that Judge Griffith left the audience with, following the June 18 ethanol meeting, was that each of our producers should contact their Congressional representatives, asking them to support pending legislation supporting crop based ethanol productions.

It's hard to believe we are in the final steps of preparing for next week's 31st Eagle Lake Station Field Day. The local arrangements committee has again done a superb job of lining up speakers and arranging the meal and evening program, and all of our scientists are busily preparing. This year's speakers for the Eagle Lake Field Day tour will include Garry McCauley, Mike Chandler, Mo Way, and Mike Jund. Garry will discuss his research on ratoon crop management, Mike Chandler will discuss weed control using aerial application of Command, Mo will discuss insect control and alternatives to using ICON, and Mike Jund will provide an overview of main and ratoon crop fertilizer research for conventional varieties and hybrids. The evening program will feature Robby Cook, Ron Gertson, and Nathan Childs. Robby will provide an update on the current status of state legislation addressing water issues, Ron will discuss land leveling options and how to make EQIP funding work for our growers, and Nathan Childs will provide an update on U.S. rice stocks, prices, and global markets. Hope you can attend the field tour, evening program, and dinner at the Eagle Lake Community Center.

Keep sending us your suggestions for *Texas Rice*.

Sincerely,

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

Inside This Issue

Cover Story:
Eagle Lake Rice Field Day

Farming Rice

a monthly guide for Texas growers

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

Conservation Tillage Improves Soil, Water Quality and Dollars

The term conservation tillage applies to any tillage and planting system that leaves 30 percent or more of the soil surface with crop residue after planting. Conservation tillage has proven to be an extremely efficient and effective tool for reducing erosion, protecting the quality of surface and ground water, and providing habitat for a variety of wildlife species. In addition, no-till farming has helped many growers become more efficient and cost effective producers of key commodities. And after several years in continuous no-till, the physical characteristics of most soils improve.

As more farmers take advantage of precision farming tools like yield monitors, variations in soils can be targeted and addressed. Conservation tillage, coupled with a precise and systematic process for improving soil, will help ensure the farm fields of today realize the production levels required tomorrow.

Each year, the Conservation Technology Information Center (CTIC) compiles a national survey of tillage practices by crops and acres planted. USDA Natural Resources Conservation Service field offices, soil and water conservation districts, and others gather data for the survey.

The definitions used to gather the information are listed below. Year after year, these definitions assist in compiling comparable data to track national tillage trends.

Tillage Systems Definitions

No-till - The soil is left undisturbed from harvest to planting except for nutrient injection. Planting or drilling is accomplished in a narrow seedbed or slot created by coulters, row cleaners, disk openers, in-row chisels or roto-tillers. Weed control is accomplished primarily with herbicides. Cultivation may be used for emergency weed control, when the herbicide program has escapes or there are problems with perennial species.

Ridge-till - The soil is left undisturbed from harvest to planting except for nutrient injection. Planting is completed in a seedbed prepared on ridges with sweeps, disk openers, coulters, or row cleaners. Residue is left on the surface between ridges. Weed control is accomplished with herbicides and/or cultivation. Ridges are rebuilt during cultivation.

Mulch-till - The soil is disturbed prior to planting. Tillage tools such as chisels, field cultivators, disks, sweeps or blades are used. Weed control is accomplished with herbicides and/or cultivation.

Zone-till and Strip-till - Although these are popular terms in some areas, they are not official CTIC survey categories because they are considered modifications of no-till, mulch-till or "other tillage types."

Other Tillage Types

Tillage and planting systems that may meet erosion control goals with or without other supporting conservation practices where less than 30 percent crop residue left after planting.

Reduced-till - Tillage types that leave 15-30 percent residue cover after planting or 500 to 1,000 pounds per acre of small grain residue equivalent throughout the critical wind erosion period.

Conventional-till (intensive tillage) - Tillage types that leave less than 15 percent residue cover after planting, or less than 500 pounds per acre of small grain residue equivalent throughout the critical wind erosion period. Generally involves plowing or intensive tillage.

Benefits of Conservation Tillage

Reduced labor requirements - No-till requires as little as one trip for planting compared to two or more tillage operations plus planting for conventional tillage.

Time savings - On a 500-acre farm, the time savings can be as great as 225 hours.

Reduced machinery wear - Fewer trips save an estimated $5 per acre on machinery wear and maintenance

costs. That's a $2,560 savings on a 500-acre farm.

Fuel savings - Save an average 3.5 gallons an acre compared to conventional tillage systems.

Improved long-term productivity - The less you till, the more carbon you keep in the soil to build organic matter and promote future productivity. Intensive tillage speeds the breakdown of crop residues and the loss of organic matter.

Higher soil moisture - Crop residues reduce water evaporation from the top few inches of the soil. No-till can make as much as two additional inches of water available for growing plants in late summer.

Improved water infiltration - Crop residues act as tiny dams to slow water runoff from the field, allowing the water more time to soak into the soil. Infiltration is also increased by channels (macropores) created by earthworms and old plant roots that are left intact. All help significantly to reduce or eliminate field runoff.

Decreased soil compaction - Reduced weight and horsepower requirements with no-till can help minimize compaction. Additional field traffic required by intensive tillage breaks down the soil structure, promoting compaction.

Improved soil tilth - No-till increases soil particle aggregation (small soil clumps) which makes it easier for water to move through the soil and allows plants to use less energy to establish roots.

More wildlife - Crop residues provide shelter and food for wildlife, such as game birds and small animals.

Improved surface water quality - Crop residues help hold soil particles and associated nutrients and pesticides on the field. On some sites, conservation tillage can cut runoff rates in half, thus protecting lake, river, and stream water quality.

Reduced soil erosion - Crop residues on the soil surface reduce erosion by water and wind. Depending on the amount of residues present, soil erosion can be reduced by up to 90% compared to an unprotected, intensively tilled field.

Reduced release of carbon gases - Less tillage keeps naturally occurring carbon in the soil for use as organic matter. Intensive tillage releases soil carbon into the atmosphere as carbon dioxide where it can combine with other gases to contribute to global warming.

Reduced air pollution - Crop residues reduce wind erosion and the amount of dust in the air. Lower horse-

Managing crop residue

Ideally, crop residue management begins at harvest with proper distribution of residue behind the combine. It continues with subsequent residue cover measurements after each trip (fall or spring tillage operations) and finishes with measurements after planting to ensure that desired levels are achieved.

Between harvesting and planting operations, a large portion of residue cover may be lost from overwintering or from burial by tillage equipment for those not using no-till systems. Because overwintering losses are nearly impossible to control, crop residue management strategies typically concentrate on limiting tillage practices to maintain high levels of surface cover.

The amount of crop residue cover that remains behind a combine depends primarily on type of crop and crop yield. Row spacing can also influence cover but to a lesser degree than the crop grown. In nearly all crop production systems, residue cover following harvest is 70% or higher. Exceptions are crops where large quantities of biomass are removed (corn silage), low residue-producing crops (soybeans), or below-normal crop yields.

Typically, there is little or no difference in residue cover remaining after harvest among varieties of a given crop when yields are normal or above-normal.

Combine Adjustments and Accessories

Wider combine headers and higher residue production with new crop varieties are two reasons a well adjusted combine is critical to high-residue farming. Without special attachments or modifications, combine headers of 20-30 feet or more are not adequately equipped to spread today's larger volumes of residues uniformly.

Common Problems

The most common mistake made in the harvesting operation is to allow crop residue to accumulate in windrows behind the combine. This accumulation causes the soil under the windrows to stay wetter and cooler which can limit early season plant growth. Planting into windrows can result in uneven stands because the seeds take longer to germinate and grow, resulting in significant yield reductions.

Other problems associated with improper combine residue distribution include unsatisfactory weed con-

trol from herbicide interception, poor performance of planters and tillage implements, increased demands on planter equipment, poor seed-to-soil contact (usually from "hairpinning" of residue into the seed row), excessive residue lying directly over the seed furrow resulting in an allelopathic effect (natural chemicals or toxins from related plant types that could inhibit germination or growth), increased pest infestation, increased weed seed concentration, and poor plant nutrient uptake (from fertilizer tie-up or interception). To avoid these problems, make sure you always check residue distribution patterns of newly purchased combines.

Straw and Chaff Spreaders

A straw spreader uses rotating blades or rubber batts to throw or deflect whole pieces of crop residue. While the spreader typically distributes the residue more uniformly, the straw chopper can provide more residue cover, since it chops the residue into small pieces before spreading.

A chaff spreader is effective in handling fine materials-primarily from harvest of small grains or soybeans. Chaff makes up nearly half of the harvested materials of some crops. It does not usually reach the straw spreader or straw chopper because it drops to the ground from the combine sieves.

The most commonly used chaff-spreading attachments are hydraulically driven single or dual spinning disks that have rubber batts attached. Generally, dual spreaders are more effective for wider headers.

However, growers must be careful not to overcorrect for windrowing problems. For example, spreaders may be set to spread the crop material too far, which simply creates windrows outside the harvested swath.

Residue Decomposition

Rainfall, higher temperatures, fall tillage or knifed-in fertilizer applications can all speed the decomposition of crop residues between harvest and planting. Breakdown rate also depends on the type of crop. Non-fragile crops like corn leave residues that are tougher to breakdown than soybean residues. Time is also a factor in the decomposition of residue. A summer-harvested crop has more time to decompose than a fall-harvested crop.

As long as adequate moisture is available, decomposition can occur when temperatures are above 50 degrees Fahrenheit (10ºC).

Two Examples in Rice

Curtis, Joe and Rodney Mowery of Rosharon have a diverse farming operation of rice, soybeans, corn, sorghum and occasioinally wheat. They have acreage in a corn/sorghum/soybean rotation that has not had any tillage in 7 years.

For their rice/soybean rotation, they practice a minimum-till regime.After the year in rice, they disk in the spring to level the fields and smooth out the ruts. Group IV soybeans are planted in early March for harvest in August when we generally have dry weather. When harvesting the beans, they use a chopper and chaff spreader to make sure the residue is evenly distributed.

Later in the fall, P and K are added and the ditches are cut to facilitate good drainage through the winter. They use a burndown herbicide in October and January to keep the fields clean. In early March, the rice is planted into the soybean residue using a John Deere 1560 No-Till drill.

Steve Devillier and Ford Frost have benefited from their partnership in a rice/cattle operation for over 20 years. Some years back, they began to integrate reduced tillage methods as a way to maximize land resources and reduce inputs.

Utilizing a 3-year rotation (rice-cattle-cattle), this is how their system works. After the first crop of rice is harvested, Steve plants rye grass into the rice stubble using an air seeder. This insures that the rye seed makes good contact with the soil for proper gemination. The cattle are moved into the field in the fall, taking advantage of the lush winter growth, which reduce feed inputs.

After two years in rye/cattle, the animals are removed in late summer, and Steve goes over the field with light disking to smooth out the ruts left by the cattle. This year they plan to try using an airway aerator, which will accomplish the same as disking, while leaving more of the residue on the surface. To complete the cycle, the field is drill-seeded back to rice the following spring. Steve says the system helps reduce weed pressure in the fields and improves the soil properties, making a better seedbed for rice.

Information for this article was taken from a booklet on conservation tillage published by the CTIC. To download a complete copy go to http://www.ctic.purdue.edu/Core4/CT/Checklist/Checklist.html

Arkansas Farmer, Scientist Win National Conservation Tillage Awards

Dr. Merle Anders shows stubble in a no-till rice research plot. He has found that reduced tillage to prepare the seedbed makes the clay pan under the topsoil less resistant to root penetration by soybeans that are often planted in rotation with rice.

A Poinsett County farmer and a University of Arkansas Division of Agriculture scientist received the Rice Farmer of the Year and Rice Researcher of the Year awards at the National Conservation Tillage Cotton and Rice Conference Jan. 13-14 in Houston.

The awards were presented to Scott Matthews of Weiner and Dr. Merle Anders, Assistant Professor of crop, soil, and environmental sciences, based at the Division of Agriculture's Rice Research and Extension Center near Stuttgart. The annual conference provides a forum for researchers, crop consultants and farmers to share information about conservation tillage.

Anders has been conducting a long-term rotation study since 2000, comparing conventional tillage and no-till systems in rice, soybeans, corn and wheat in collaboration with other scientists and organizations.

"We see a significant reduction in runoff of soil and phosphorus from the no-till treatments," Anders said. He also cited benefits such as:

- less clay-pan resistance to root penetration, which helps soybeans that follow the rice crop;
- no soil crusting after heavy rain, which saves water normally used to flush a field when soil is crusted over before seedlings emerge; and
- increased organic nitrogen uptake, which suggests the potential to reduce nitrogen inputs.

No-till systems are widely used in cotton and soybeans, but have been slow to catch on in rice, Anders said. Matthews said he uses no-till exclusively, when possible, on his 1,150 acres, which are all in a rice and soybean crop rotation.

"The bottom line is that no-till saves time, labor, equipment repairs, fuel and water," Matthews said. "Early is what makes it go for me," Matthews said. "I am very aggressive in using new, earlier varieties and other technology."

By early planting of varieties that mature early, Matthews hopes each year to harvest beans and rice before fall rains begin. Combines in wet fields cause rutting, which often requires using tillage equipment to prepare the seedbed for the next planting.

Matthews sometimes has to work rutted fields in the fall, but, he said, "I don't remember the last time I worked a field in the spring."

Conservation tillage encompasses the three levels of minimum-till, which includes using equipment for minimal preparation of a seedbed in the spring; con-till, which involves working land after harvest but not in the spring; and no-till. "No-till works the best for me," Matthews said, "but every farmer should match the system to his ground." Keeping tillage equipment parked allows major savings in fuel, labor and repairs, he said. Matthews said he is very pleased with the yields from his no-till system, especially in soybeans. And he has reduced watering of his soybeans, which are all irrigated, from three or four using conventional tillage to one or two with no-till.

Matthews' advice for other farmers who want to try a conservation tillage system is to match the system to their soils, and, "I would stress, use the new technology." He said he is looking into precision systems that use Global Positioning System (GPS) technology as the next innovation in his operation.

For more information contact Merle Anders, Arkansas Rice Research & Extension Center, 870-673-2661.*

Excerpted from an article by Howell Medders, UARK Communication Services

Farmers Supporting Research

Through farmer check-off dollars, the Texas Rice Research Foundation has provided nearly $600,000 for research in 2005. This is the second in a two part article summarizing the projects funded.

The Texas Rice Research Foundation Board is made up of farmers and industry representatives who volunteer countless hours to insure that check-off funds are spent responsibly.

Establishment of Puerto Rico Winter Nursery for Generation Advance and Seed Increase - Anna McClung, Rodante Tabien - $37,580

Although greenhouses are available to U.S. rice breeders, one season field planting limit generation advance, selection and seed increase of important materials. Winter nurseries speed up these processes, eventually shortening the duration of varietal release. The project aims to establish winter nurseries composed of 9,000 elite lines selected from summer plantings in Beaumont.

Cost Effective Application of Biotechnology to the Texas Rice Industry - William Park, Rodante Tabien, Ted Wilson - $46,927

This project has two goals. First, in collaboration with Ted Wilson, we are further examining transgenic Cypress over-expressing the gene for cytosolic glutamine synthetase from alfalfa. This gene plays a key role in nitrogen assimilation and translocation and there is evidence from work in other species that it may lead to a significant increases in yield.

Plants are being grown under both greenhouse and field conditions and yield will be directly examined. Cell lines over-expressing this same gene are known to have significant levels of tolerance to herbicide "Liberty", thus these plants will also be tested for herbicide tolerance.

The second goal, in collaboration with Rodante Tabien, is directed toward developing the technology for wide crosses with the African rice species

Crosses between *O. glaberrima* and *O. sativa* are technically difficult because of sterility barriers, but some of the resulting progeny have much higher yield than either parent. Such crosses have already had a dramatic effect on rice production in Africa - as indicated by the 2004 World Food Prize awarded to Dr. Monty Jones, one of the key scientists responsible for this work. To determine whether similar crosses could play an important role in increasing the competitive position of the Texas rice industry, we are thus beginning to make crosses with *O. glaberrima* or existing *glaberrima/sativa* lines and to set up anther culture technology needed to overcome F1 sterility.

Evaluate Four PGRs to Enhance Ratoon Tiller Number - Lee Tarpley - $47,481

Evaluate gibberellin applied during grain filling to stimulate ratoon tiller earliness. Identify how high night temperatures depress yield. Evaluate PGRs to alleviate this and other environmental stress effects. Identify seed treatments that promote optimal early growth in cool soil.

Evaluation of New Rice Varieties, Herbicide Resistant Varieties, and Hybrids for Main and Ratoon Crop Production in Texas - Fred Turner, Mike Jund - $40,000

This research identifies the weak and strong points of potential or released varieties and hybrids from university, USDA, and private breeding programs in Arkansas, Louisiana, Mississippi, and Texas. The eighteen entries in this year's test will be evaluated for various agronomic traits, including main and ratoon yield response to fungicide under intense N management.

Insect Control in the Texas Rice Belt - M.O. Way - $59,287

The entomology project will conduct multiple stud-

TRRF Funding continued...

ies in 2005 both at the Beaumont Center and at the Eagle Lake Station. The project will evaluate seed treatments to replace Icon 6.2FS for rice water weevil control; conduct third year planting date study to determine cost benefit of controlling rice water weevil; evaluate Prolex, Mustang Max and Intrepid 25 for stem borer control; begin developing economic thresholds for stem borers; monitor spread of Mexican rice borer in the Texas rice belt; survey Texas rice belt for South American rice miner; complete studies to develop easier and more efficient sampling method for rice stink bug; evaluate residual activity of insecticides and adjuvants for rice stink bug control; begin developing relationship between number of rice stink bug applications and rice grade; and begin revising economic thresholds for rice stink bug.

The entomology project will extend results of above research to clientele via one-on-one discussions, 'levee' meetings, field days, winter extension meetings, *Rice Production Update*, *Rice Production Guidelines*, *Texas Rice* and other extension-type publications. Information also will be placed on the Beaumont Center Website.

Personnel Support - Eagle Lake Station - $60,000

The TRRF Board continues to supply significant support towards staffing at the Eagle Lake Station. The money funds two full time technician positions, which support both Eagle Lake and Beaumont Center scientists.

Rice Field Days

June 28: Texas A&M Research Station, Eagle Lake, 4pm

June 30: LSU AgCenter, Crowley, 7:30am

July 7: Garrett Farms, Danbury, 3pm

July 14: Texas A&M Research Center, Beaumont, 8am

Rice Leadership Development Program Now Taking Applications

STUTTGART, AR. - The Rice Foundation is accepting applications for the 2006 Leadership Development Program. Rice producers or industry-related professionals between the ages of 25 and 45 are eligible to apply for the Program. The application deadline is October 1.

The Rice Leadership Development Program gives future leaders a comprehensive understanding of the rice industry, with an emphasis on personal development and communication skills. The class attends four one-week sessions over a two-year period that encompasses studies of all aspects of the rice industry through firsthand observations.

A special committee of rice industry and agribusiness leaders evaluate applications, letters of recommendation, as well as conduct personal interviews to determine the five rice producers and two individuals from rice-industry related professions who will make up the Rice Leadership Development Class.

This class will have their first session in the spring of 2006 when they will visit Texas and Louisiana. They will receive an orientation to industry and organizational structures; learn organizational leadership and effectiveness skills; and tour rice production, milling, research, promotion, and marketing facilities in the Gulf Coast rice-growing areas.

Session II will take place in Arkansas and the Midwest in late June 2006. The class will observe and discuss area rice production, milling, marketing and research; improve their communication skills - business etiquette, public speaking and media training; and observe the rice futures market at the Chicago Board of Trade.

In September of 2007, Session III will be in California, where the class will discuss agricultural and environmental issues unique to that state. They will also observe rice production, harvesting, milling; and learn about marketing and research.

The class will finish up in Washington, DC where they will discuss industry issues with regulatory and governmental agencies; and have bipartisan discussions with key legislative contacts.

Go to http://www.usarice.com/industry/communication/leadership.html for more information.*

Biomass-To-Ethanol Technology Could Help Replace Half Of Auto Fuel In U.S.

Half the automotive fuel in the United States could be replaced with ethanol from renewable agricultural crops, forest wastes and energy crops, says a University of Florida researcher who has developed a biotechnology "bug" that converts biomass and other farm wastes into fuel.

"We can reduce our dependence on imported oil and lower the price of automotive fuel by reformulating our gasoline with ethanol derived from inexpensive farm wastes," said Lonnie Ingram, a professor of microbiology with UF's Institute of Food and Agricultural Sciences.

His breakthrough technology — a genetically engineered E. coli bacteria — produces fuel ethanol from farm wastes such as corn stems, cobs and leaves. A related technology can be used to produce biodegradable plastics from biomass.

"With the cost of imported oil reaching record highs, we can use this new technology to produce ethanol for about $1.30 a gallon," he said. "Ethanol will stretch the nation's fuel supply and make gasoline burn more cleanly. Gasoline-ethanol blends also boost the octane rating of automotive fuel."

Ingram, who was invited to present a briefing about the technology to the staff and members of Congress in April, says his genetically engineered E. coli bacteria is capable of converting all sugar types found in plant cell walls into fuel ethanol. Ingram's organism produces a high yield of ethanol from biomass such as sugarcane residues, rice hulls, forestry and wood wastes and other organic materials.

The bioconversion technology, selected by the U.S. Department of Commerce to become Landmark Patent No. 5,000,000, is being commercialized with assistance from the U.S. Department of Energy (DOE). BC International Corp., based in Dedham, Mass., holds exclusive rights to use and license the UF-engineered bacteria.

Until now, all of the world's fuel ethanol has been produced from high-value materials such as cornstarch and cane syrup using yeast fermentations. In 2005, more than 4.5 billion gallons of fuel ethanol will be manufactured from cornstarch and used as automotive fuel. He said his technology will further expand ethanol production by converting celluloic waste into fuel ethanol, more than doubling current ethanol production.

Ingram, who is Director of the Florida Center for Renewable Chemicals and Fuels at UF, cited a recent report from the U.S. Department of Agriculture and DOE that indicates more than one billion tons of biomass can be produced on a sustainable basis each year. Converting this to fuel ethanol could replace half of all imported petroleum in the United States.

A member of the National Academy of Sciences, Ingram said he genetically engineered the E. coli organisms by cloning the unique genes needed to direct the digestion of sugars into ethanol, the same pathway found in yeast and higher plants. These genes were inserted into a variety of bacteria that have the ability to use all sugars found in plant material, but normally produce a worthless mixture of acetic and lactic acids as fermentation products. With the ethanol genes, the engineered bacteria produce ethanol from biomass sugars with 90 to 95 percent efficiency.

"Until we developed this new technology, the chemical makeup of biomass prevented it from being used to make ethanol economically," Ingram said. "Biomass is a much cheaper source of ethanol than traditional feedstocks such as cornstarch and cane syrup, but the cost of processing is higher."

Greg Luli, vice president of research for BC International's laboratory at the Sid Martin Biotechnology Center in Alachua, Fla., said the firm plans to build a 30- million-gallon biomass- to-ethanol plant in Jennings, La. The plant's technology and process will be based upon Ingram's genetically engineered bacteria.

"The facility, expected to be operational by the end of 2006, will convert organic waste into ethanol," Luli said. "Waste from the sugarcane industry in Louisiana will serve as the plant's main feedstock."

"Energy independence is important to Florida and the nation, and it should be a 10-year national goal," Ingram said. "Energy independence should be the 'moonshot' of our generation." *

Excerpted from an article by Chuck Woods
Source: Lonnie Ingram (352) 392-8176

Gasoline Additives Explained

MTBE (methyl tertiary-butyl ether) has a chemical attraction to the water molecule and increases the solubility of other, harmful components of gasoline. Because of this, MTBE often ends up in drinking water, especially in cases where oil storage tanks leak near populated areas, and may make contamination by other compounds more likely. MTBE biodegrades very slowly, remaining in water for decades and has been labeled a "potential human carcinogen" by the Environmental Protection Agency.

Ethyl tertiary butyl ether (ETBE) is produced by mixing ethanol and isobuylene and reacting with them with heat over a catalyst. ETBE offers the same or even greater air quality benefits as ethanol, without some of the technical and logistic challenges that face the alcohol. ETBE is approximately 42% ethanol.

Like ethanol, ETBE reduces air pollution, increases gasoline octane and can help reduce the importation of crude oil into the U.S. One of the logistic challenges that has hampered ethanol historically is its inability to be shipped in the U.S. pipeline system. Because ethanol is likely to pick-up any water or other contaminants left in the line, it has been confined to transportation by truck, barge or rail. This is not the case with ETBE. ETBE can be blended into the final gasoline right in the refinery and then shipped to its point of sale through the traditional transportation pipeline.

Another plus for ETBE is its lower vapor pressure - or evaporative properties. When ethanol is blended with gasoline, it makes the fuel evaporate more quickly, which is a concern when air quality is considered. By converting the ethanol into ETBE, this issue is eliminated. In fact, ETBE can actually cause a slight reduction in the overall volatility of gasoline.

There are two basic types of facilities that can produce ETBE; a small plant based in a refinery that produces ETBE only for the gasoline it produces, or larger "merchant" plants that produce ETBE for resale. Currently there is no real ETBE production in the U.S., but virtually all of the existing MTBE plants have the ability to switch to ETBE production. ETBE is used much more in Europe. *

County Judge Proactive Over Ethanol Funding

Jefferson County Judge Carl Griffith organized a meeting with area farmers to discuss a strategy for securing funding in the Energy Bill that will bring ethanol production to Southeast Texas. The following is taken from a policy paper released by his office in early June.

GOAL: To bring ethanol production to Southeast Texas using crops grown in the region as a feedstock, for manufacture of ETBE as a replacement for MTBE. This effort will reinvigorate agriculture production in Southeast Texas, while also providing a conversion option for MTBE producers in the region.

WHAT IS NEEDED: Assistance from Senators Cornyn and Hutchison to offer an amendment to the pending Energy bill to fund a feasibility/demonstration/pilot ethanol production project using rice, sugarcane, sorghum or other crops as a feedstock. Note that Sec. 207 of the pending bill is specific to sugarcane. While it lists Texas among the eligible states, its limitation to sugarcane restricts the ability to use rice, sorghum and other crops. We support the efforts of the sugarcane producers and would not want to see Sec. 207 changed in such a way as to diminish their efforts. Ideally, we would explore the feasibility of a single facility utilizing all of these feedstocks. Perhaps Sec. 209 could be amended at Sec. (c)(1) to include rice and other grains that have not been studied as an ethanol feedstock, as well as cellulosic material, and provide that one of the projects be done in Jefferson or Chambers County.

IMPACT: The Reformulated Gasoline (RFG) and Oxygenated Fuels programs of the Clean Air Act require the addition of oxygenates to fuels. The two most common oxygenates are ethanol and methyl tertiary butyl ether (MTBE). Ethanol produced in Southeast Texas could be used in the region's refineries to produce ETBE. The facilities are currently refining MTBE. As momentum builds for the phase-out of MTBE as an additive, these facilities and their workforces are threatened. With liability protections and conversion incentives, they have expressed interest in conversion to ETBE. This approach would reinvigorate agriculture in Southeast Texas and elsewhere, while also addressing the MTBE issue. *

State, National and International News...

Alternative Fuels Take Spotlight In Energy Bill

Makers and users of various alternative, home-grown fuels are anxiously awaiting passage of a proposed energy bill, which is channeling its way through Congress. In late May, the Senate Energy and Natural Resources Committee approved a comprehensive energy bill — legislation that the Senate leaders say could be brought before the full Senate floor in the very near future.

Also in May, the Senate adopted a measure in the version of its bill that calls for an 8-billion gallon renewable fuels standard by 2012, (as recommended by the Governor's Ethanol Coalition report published in April 2005). That amount is significantly higher than the $5-billion fuel standard called for in the House of Representative's version of the bill, which passed last month.

But two senators, Democrat Tim Johnson of South Dakota and Republican Jim Talent of Missouri, both on the Energy Committee, expressed confidence that a final bill would outline standards closer to the Senate's version. Johnson noted that the production of ethanol, which currently amounts to the largest percent of renewable domestic energy, peaked in 2004 at 3.45 billion gallons. "I do expect an energy bill to pass in the Senate this time around," Johnson said.

Bob Stallman, president of the American Farm Bureau Federation, said the standard "raises the bar." "If enacted, an 8-billion-gallon renewable fuels standard would not only benefit the environment, but also provide substantial market growth opportunities for traditional ethanol, cellulosic ethanol technology (see article on page 9) and biodiesel," he said.

A comprehensive energy bill has been delayed in the U.S. Senate because of debate over the cost of the legislation, in addition to the provision that permits oil drilling in the Arctic National Wildlife Refuge. Final legislation is expected to cost more than $8 billion.

The recent spike in gasoline prices has enhanced the national interest in becoming more dependent on energy sources other than traditional crude oil, as well as depending less on fuel from overseas countries.

Of the 20 million barrels of crude oil the United States consumes daily — one-quarter of global consumption — 65 percent is imported.

Excerpted from an article by Andrew Bell, Farm Press Daily

MTBE Lawsuit Costs and Energy Bill Debate

Powerful House Republicans, including Majority Leader Tom DeLay and Rep. Joe Barton of Texas, want to revive an energy bill including a provision to protect oil companies and other MTBE makers from defective product lawsuits, meaning they could not be sued simply for manufacturing MTBE.

They contend that the Clean Air Act required refiners to use additives like MTBE to reduce ozone, and refiners should not be punished for following the law.

Moderate Republicans and many Democrats in the Senate vehemently oppose the liability shield as a get-out-of-jail free card that would allow companies like ExxonMobil, ConocoPhillips and Lyondell Chemical Co. to duck liability and stick communities with the cleanup bill.

From www.planetark.com

Climate-Friendly Farming

Reducing greenhouse gases from agriculture is the goal of Climate Friendly Farming, a five-year cooperative project involving the Agricultural Research Service and Washington State University.

Agriculture accounts for 7 percent of all U.S. greenhouse gases. For example, cows release methane while digesting food; applying nitrogen-based fertilizers leads to nitrous oxide emissions; and tilling speeds the breakdown of soil organic matter, releasing carbon dioxide into the atmosphere.

Agriculture can have positive effects, too. Modifying farm practices can preempt the formation and release of gases. For example, instead of tilling, a farmer might adopt direct seeding, a practice that leaves organic matter relatively undisturbed and increases soil carbon storage, according to ARS soil scientists Dave Huggins.

Huggins is designing novel cropping systems that avoid disturbing the soil. Two examples are conventional and organic direct-seeding, and perennial cropping systems. He's also integrating global positioning and geographical information systems to devise new methods of applying and using nitrogen fertilizer that will mitigate greenhouse gas emissions.

Excerpted from an article by Jan Suszkiw ARS News Service

2007 Farm Bill Forums

Agriculture Secretary Mike Johanns announced the first Farm Bill Forum and the topics on which the USDA will be seeking input from America's farmers, ranchers and rural residents regarding the development of the 2007 Farm Bill. The first Farm Bill Forum will be held in Nashville, TN on July 7 from 6:00 to 10:00 p.m. CDT at RFD-TV Northstar Studios.

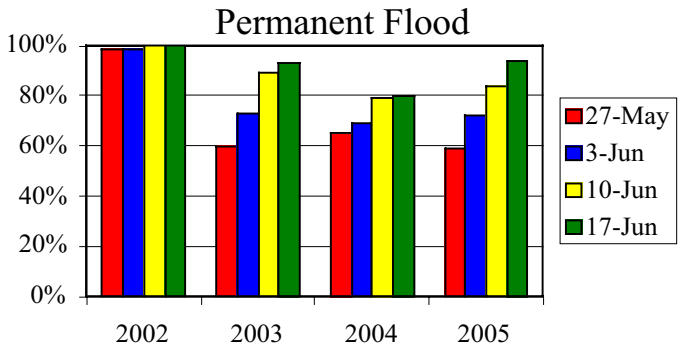
Johanns noted in his remarks that he was approaching the Farm Bill Forums with an open mind. Throughout 2005, Johanns and other senior USDA officials will participate in the Farm Bill Forums that will be held across the country. The forums will be announced as they are scheduled and be available on the USDA website at www.usda.gov/farmbill.

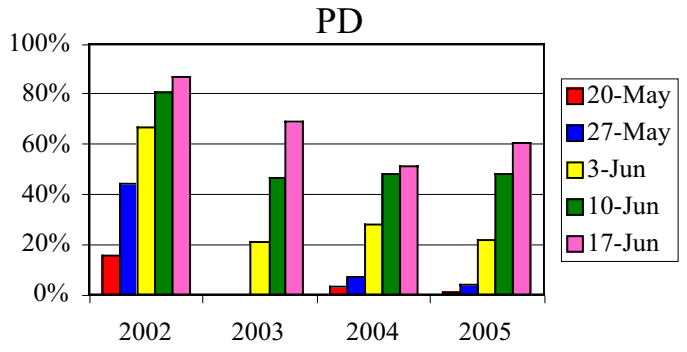
Six topics have been identified to provide a framework for the forums: 1. How should farm policy be designed to maximize U.S. competitiveness and our country's ability to effectively compete in global markets? 2. How should farm policy address any unintended consequences and ensure that such consequences do not discourage new farmers and the next generation of farmers from entering production agriculture? 3. How should farm policy be designed to effectively and fairly distribute assistance to producers? 4. How can farm policy best achieve conservation and environmental goals? 5. How can Federal rural and farm programs provide effective assistance in rural areas? 6. How should agricultural product development, marketing and research-related issues be addressed in the next farm bill?

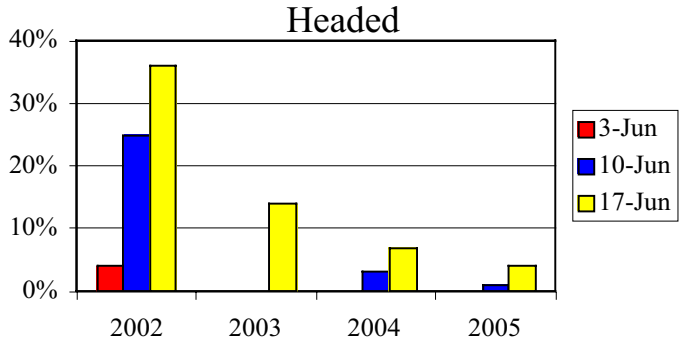
USDA will review the public comments received by December 30, 2005, including any analyses, reports, studies and other material submitted with the comments that address the six questions. *

Rice Crop Update

As of June 17, 94% of the Texas rice crop was in permanent flood, well ahead of last year, but slightly behind 2003. PD was reached on 61% of the crop, 10 points ahead of 2004, and slightly behind 2003. Heading was at 4% of the total crop, well behind the three previous years.







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http://beaumont.tamu.edu

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 Brandy Morace, with additional support by Jim Medley. Information is taken from sources believed to be reliable, but we cannot guarantee accuracy or completeness. Suggestions, story ideas and comments are encouraged.

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