

Texas Rice

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Integrated Pest Management: A Historical Perspective

Integrated Pest Management (IPM) is a management approach that focuses on long term prevention of pests or their damage through a combination of techniques that rely on diligent crop monitoring. These techniques include biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed. Pesticides are selected and applied in a manner that minimizes risk to human health, beneficial and non-target organisms, and the environment.

The origin of the IPM movement can be traced back to the early 1950's when entomologists began to discover that insects were developing resistance to many pesticides. They began to develop strategies to avoid development of resistance, such as relying on natural enemies, cultural controls, and by alternating classes of pesticides. It was during this time that the term IPM was coined and the concept of an economic injury level and an economic threshold were developed by Dr. Vern Stern and coworkers at the University of California at Riverside. The economic injury level is the lowest population density that will cause economic dam-

age, where economic damage is the amount of injury that will justify the cost of artificial control measures. The economic threshold is a population density that is usually lower than the economic injury level, and in practical terms it is the pest density at which a pesticide control is initiated. If a grower or consultant has their own planes or spray rigs, and if they can spray right away, then the economic threshold is equal to the economic injury level. But, if it takes a day or more to schedule an application, the economic threshold has to be low enough to insure that the pesticide is applied before an increasing pest population reaches damaging levels. Numerous studies have shown that increased grower profits will inevitably be the result when sound economic thresholds are used in conjunction with practical but reliable sampling methods, the foundation for a sound IPM program.

Early momentum for the IPM movement came in 1962 when Rachel Carson published *Silent*



The Rice Water Weevil adult, a major focus of rice IPM programs.

Spring, a landmark book that warned of the dangers that pesticides posed to our environment. Although the merits of the book are

still often hotly debated, there is no doubt that it fueled a new public awareness that nature was vulnerable to human intervention, reinforcing the basic principles being developed for Integrated Pest Man-

agement. But, it was not until 1971 that the first large-scale IPM research efforts begin. The Huffaker project, named after Dr. Carl Huffaker at the University of California Berkley, trained hundreds of future researchers and crop consultants. Funded by the Environmental Protection Agency, the National Science Foundation and the USDA, the Huffaker Project encompassed universities in 18 states, with over 300 participating scientists. Their work was primarily on alfalfa, apples, citrus, cotton, pears, pine trees and soybeans.

The Consortium for Integrated Pest Management (CIPM) was an outgrowth of the Huffaker project and was initiated under the direction of Dr. Perry Adkisson at Texas A&M University in 1979. This project included 17 state universities. Interdisciplinary effort was

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From the Editor...



This issue of *Texas Rice* covers Integrated Pest Management, a topic that is near and dear to my heart. In 1970, when I left the family farm implement and welding business and began work as an entomology field assistant, my new boss was none other than Dr. Vern Stern, the father of Integrated Pest Management. Dr. Stern was a character bigger than life. It was not until several years later that I really learned to appreciate the scope of influence that this man had on agriculture and on the lives of many of the young researchers that he helped to train.

Dr. Stern, along with Drs. Robert van den Bosch and Kenny Hagen developed the economic threshold and economic injury level concepts, which are so central to the development of IPM. The idea that a pest was only a problem when its numbers reached a damaging level was revolutionary at that time. These forward-thinking individuals were also instrumental in promoting pest management as a complete package of management tools revolving around the use of reliable sampling methods to determine when pests reach levels requiring a control action, the use of resistant varieties, and cultural, chemical, and biological controls in combination to regulate pest populations at safe levels. By initiating control actions only when a pest reached an economic threshold, Dr. Stern and many who followed in his footsteps were able to show that growers could greatly improve profits using IPM, while reducing the risk of economic loss.

In the years that followed, I was fortunate enough to work for several other distinguished IPM experts. Dr. Tom Leigh, a tall German with a deep booming voice taught me the love of science. Dr. Dan Gonzalez, possibly the greatest biological control foreign explorer in the history of entomology, taught me the importance of reliable sampling tools to determine the abundance of pests and beneficial insects. He was also the first to convince me that the old saying “The only good bug is a dead bug” is often not true and that for every pest species there are probably a dozen or so “good guys” who use the pests as food.

In the mid-1970’s, my IPM training took a major turn when I met a brash young Assistant Professor. Dr. Andy Gutierrez was at that time beginning to develop an international reputation as one of the very best IPM theoreticians. Like many theoreticians, Dr. Gutierrez had a strong working knowledge of ecology and mathematics. But, Dr. Gutierrez was a different breed than the large majority of his colleagues by having a tremendous amount of field experience. He not only talked the talk, he walked the walk when it came to understanding what made agricultural systems tick. Possibly more than anyone before or after, Dr. Gutierrez taught many of us how to better unravel the inner workings of the different parts of an agricultural system. He taught me that putting IPM into practice required a thorough knowledge of what makes a crop grow the way it does, determining how insects, weeds, and diseases affect a crop’s growth, and how market pricing and input costs determine the best way to grow a crop.

From my early years as a field assistant to my current position as Beaumont Center Director with the Texas A&M University System, I have watched IPM evolve far beyond its entomology roots. Now when people talk about IPM their thoughts increasingly encompass all aspects of crop production and management. Whether we call it IPM or ICM (Integrated Crop Management), as is increasingly popular, the concept will continue to evolve with the goal of increasing profitability and sustainability for U.S. farmers.

Sincerely,

Ted Wilson
Professor and Center Director

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Researcher in the News...

Beaumont Entomologist

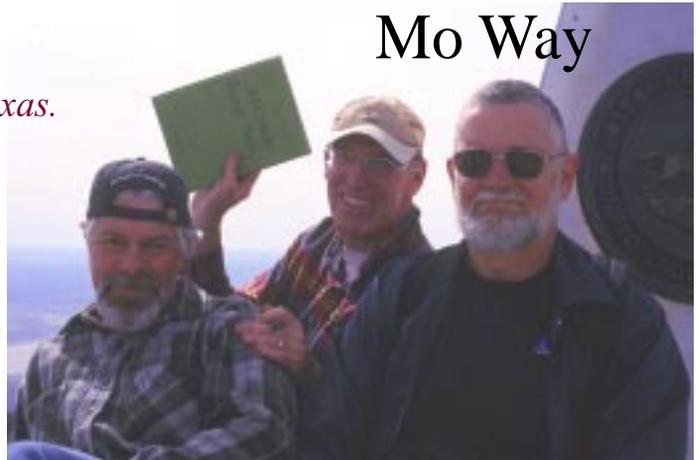
Michael Orrin Way was born and raised in Bakersfield, California. His mother and sister still live there, but Mo left California in 1982 to make his home in Texas.

From early childhood Mo had a keen interest in science and agriculture. He participated in 4-H, raising sheep and calves for show. When Mo was old enough he began working for local growers picking melons, scouting cotton fields, and loading freight cars for fruit packing sheds. His mom worked at home taking care of Mo and his older sister, Donna Rae, while his dad worked in the oil fields surrounding Bakersfield.

After high school, Mo went to Bakersfield Junior College for two years before transferring to the University of California at Davis where he captained the football team. It was at Davis that Mo received his BS, MS and PhD, all in entomology. His decision to continue on after his BS degree was influenced greatly by his undergraduate advisor, Dr. Al Grigarick, who specialized in insects associated with rice production. He began working as a technician in Dr. Grigarick's lab soon after transferring to the UC Davis campus from the UC Riverside campus where he worked for Dr. Vern Stern, one of the fathers of Integrated Pest Management (IPM). Mo was impressed by Dr. Grigarick's dedication and love for his work. He convinced Mo to continue in school, and served as Mo's major professor for his PhD work. In 1982, as Mo was finishing his dissertation, he saw a notice on the bulletin board for an opening at the Beaumont Center for a rice/soybean entomologist. It was a perfect fit, and Mo came to work for Texas A&M in September of 1982.

Making the transition from an academic environment to the 'front lines' of an off-campus experiment station was a little awkward at first. Mo soon learned that interaction with growers was vital. He believes that for his research to be truly relevant and useful he has to know what questions the farmers are asking, and what are the specific problems they need solved. This understanding can only come from spending time with the growers and walking their fields. According to Mo, this is a special challenge for off-campus researchers - balancing their academic requirements with their commitment to directly serve constituents, i.e.

Mo Way



Mo with Mark Nunez (L) and Glenn Wallace (R) on top of the Guadalupe Mountain, the highest peak in Texas. Mo is holding the record book that is kept at the peak's summit for hikers to sign in when they reach the top. Mo makes an annual trek with his crew to various scenic locations across the country.

the Texas farmer.

In looking at the Beaumont Entomology research program, it is clear that Mo focuses on projects that have a direct impact on his farmers. In recognition of his strong commitment to extending his research findings, Mo's position was recently changed to include an extension component. Since the inception of the Jefferson County Rice IPM program in 1997, Mo has assisted Kelby Boldt in training the scouts and answering specific questions that come up throughout the season. Essentially, Mo's research objective is to develop IPM programs for insect pests of rice and soybeans. Because the rice water weevil (RWW) is a key pest, the Entomology Project has spent considerable time developing effective, affordable and safe controls. Working with Dr. Ed Rister and Sandra Sundarapather, they developed economic injury levels for the rice water weevil. And Mo's project was largely responsible for extending the use of Furadan from 1989 to 1999, in addition to registering 3 new pest management tools to replace Furadan. Currently, Mo's graduate student, Bandara Ratnayake, is working on developing an artificial diet for the RWW. If successful, the diet could be used to bioassay transgenic rice for resistance to various insect pests. This research is supported by Rice Tec, Inc. of Alvin.

Every year Mo's program evaluates novel insecticides to increase the number of pest management tools

continued on next page

Researcher continued...

available to Texas rice and soybean farmers. More tools mean less chance of resistance build-up, insurance against withdrawal of an insecticide by EPA, and greater competition among basic manufacturers, which theoretically reduces pesticide costs. This year the lab is evaluating 6 new insecticides at different rates and timings.

With regard to the efficacy of Icon 6.2FS treated



Glenn Wallace, the Entomology Project's senior technician.

seed after storage, Mo and his crew addressed this question with an experiment conducted at the Beaumont Center this year. XL-6 and Cocodrie were treated with Icon 6.2FS at 0.0375 lb (AI)/acre in Dec 2000 (then stored in a rice bin) or treated in Apr 2001 (just before planting). Plots were planted at 80 lb seed/acre in

April. Results of the test, showed that storage of treated seed overwinter did not reduce efficacy of Icon 6.2FS relative to RWW control.

An increasing part of Mo's research program now focuses on the biology and management of stem borers. Stem borers, primarily Mexican rice borer (MRB), are becoming more abundant and damaging in the southern portion of the Texas Rice Belt (Jackson and Matagorda Counties). The MRB was introduced from Mexico into the Lower Rio Grande Valley of Texas in 1980 and was first detected in the Texas Rice Belt in 1987. In 2000, MRB pheromone traps were placed in most counties of the rice belt to determine the current range of this insect. Adult moths were found in Fort Bend, Brazoria, Wharton, Waller, Matagorda, Calhoun, Jackson and Colorado Counties. None were collected in counties farther east. Trap counts suggest that populations gradually build during the summer and peak in early fall when ratoon rice is maturing. This research is partially funded by

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Spotlight on Support

Glenn Wallace holds the honor of having worked at the Beaumont Center longer than any other current employee. He began his career in the fall of 1960 working for Dr. James Stansel in Environmental Genetics. When Dr. Stansel transferred to Eagle Lake, Glenn began working for the Entomology Program under the direction of Clarence Bowling. Ten years later Clarence retired and Glenn took up the reins for the new entomologist, Dr. Michael (Mo) Way. It was truly a bonus for Mo, fresh out of U.C. at Davis, to have someone with Glenn's experience in entomology research to direct his crew. Glenn was born and raised in Beaumont, the oldest of four children. He and his wife, Reba, live in China and have five children, ranging in age from 25 to 36. Glenn's duties include land preparation, planting, plot maintenance, treatment applications, harvesting, data collection, and sample processing. He is also the official research center weatherman. Glenn believes, as far as bosses go, it doesn't get any better than working for Mo: donuts every Friday, frequent crew lunches, annual hiking retreats, and, of course, the beach bash that Mo throws for his hard-working crew every summer.

Mark Nunez was born and raised in Beaumont, the fourth child in a family of eight. He acquired a B.S. in Environmental Science from Lamar University and went to work for the City of Beaumont in the Water Utilities Dept. In 1984 Mark accepted a position with Dr. John Sij in the Alternative Crops program at the Beaumont Center. During his thirteen years with Dr. Sij he returned to Lamar and completed a M.Ed. in Secondary Education specializing in biology. When the alternative crops research was discontinued in 1997 Mark taught high school and also worked for an irrigation company designing and installing sprinkler systems. In May of 2000 Mark returned to the Center to work for Dr. Way. He helps coordinate activities for the summer crew and is involved in all aspects of the research project including field operations and data collection and analysis. He and his wife, Shelly Ryan, recently celebrated their 25th wedding anniversary. They have two great teenagers, Casey(16) and Emily(14).

Derick Beach was familiar with the Entomology Program long before he began employment at the Beaumont Center. Derick's dad, David Beach, worked with Glenn Wallace under Clarence Bowling. When Derick was just knee-high to a grasshopper he began working at the Center, first for Robert Weatherston, and then for Dr. Way in the summer. When he was a senior at Hardin-Jefferson high school Derick participated in the work co-op program, going to school in the morning and working for Mo in the afternoon. Derick has worked in the Entomology Program for four years and is currently attending Lamar University pursuing a degree in business administration.

The Entomology Program also works closely with the clerical staff (Tammy Tindel, Robin Clements, and in particular Cynthia Tribble) who are essential to the efficiency and productivity of the research and extension programs. They answer the phones, type and edit reports, prepare slides, schedule meetings and help create an enjoyable work environment. Without their help and dedication, the Entomology Program would be far less effective.*

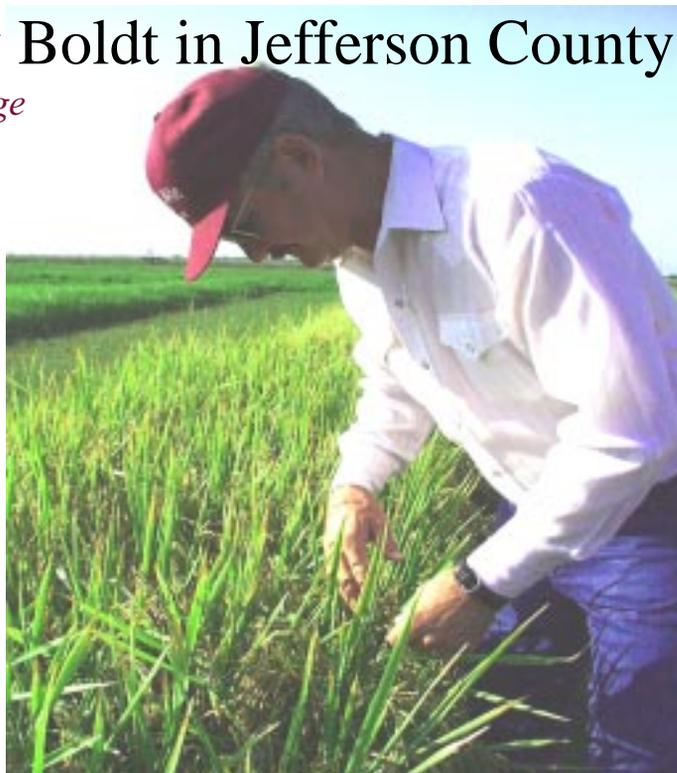
Texas Cooperative Extension in the News...

Kelby Boldt is not your average extension agent. With over 25 years experience in agricultural production and forage management, Kelby is a valuable resource for Texas producers and for his community.

Kelby Boldt in Jefferson County

Raised on a 400-acre farm southeast of San Antonio, Kelby grew up with typical responsibilities of a farmer's son. The oldest of three, with two younger sisters, Kelby was responsible for feeding, watering and caring for a variety of animals including chickens, hogs and cattle. He knew early on that agriculture was his love, and would one day be his life's work. Kelby and his wife, Sharon, along with their 2 children, Clayton (15) and Amanda (11), have a beautiful little farm in Bevil Oaks. A strong supporter of FFA and 4-H, Kelby guides his children in rearing pigs and cattle. He believes in the youth agricultural programs, and recognizes the importance of such activities for young people. Says Kelby, "It gives them a sense of responsibility, and teaches them the value of hard work and dedication." These are values that Kelby lives by, not just at home, but in his work for Texas producers.

Kelby started working for Texas Cooperative Extension in 1975 in Brazoria County. Having just acquired his bachelors degree from Texas A&M in Agricultural Education, Kelby began his extension work in the 4-H program. After two years he transferred to Liberty County where he worked in horticulture, agricultural production and 4-H, including



extensive involvement in the planning and coordination of the area livestock shows. During his time in Liberty County, Kelby acquired his Masters Degree in Agricultural Education, also at Texas A&M, finishing in 1982.

In 1992 Kelby transferred to Jefferson County, where he initiated several new projects. In an effort to better assist SE Texas producers, many who raise cattle in rotation with rice, Kelby began forage crop evaluation trials at the Mark Stiles unit of the Texas Department of Criminal Justice. Starting in 1994, the project evaluates yield and other characteristics on many varieties of forage grasses common to this area. One of the early varieties tested was *Jiggs*, a Bermuda grass now familiar to many Texas producers. Kelby is able to capitalize on prison labor to some extent, but still has to watch the plots closely and apply fertilizers and herbicides as needed.

Another innovative project that Kelby helped initiate is the Jefferson County Rice IPM Program. Development of the project began in 1997 with a meeting of area rice producers, representatives of the Texas Pest Management Association, Texas Cooperative Extension and the Texas



Clayton with his show calf, getting help from younger sister Amanda.

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Extension continued...

Agricultural Experiment Station. With ever increasing production costs and concerns over the environmental impact of agricultural production, they recognized the need for a scouting program based on IPM principles. Many farmers south and west of Houston hire consultants to scout for weeds, diseases, and insects and to monitor plant nutrition. These farmers re-



Kelby with his wife Sharon.

port that implementation of consultant recommendations significantly increases income by utilizing technology more efficiently to increase yields and milling quality, reducing per unit production costs. Unlike farmers in the western rice belt, very few eastern farmers contract for consulting services. Reasons for this vary, but a major factor is that only one semi-retired consultant is available for all of Jefferson, Chambers, Liberty, Orange, Galveston and Hardin counties. In 1997 rice acreage in these counties was sizeable, around 63,000, which comprised 25% of the total rice acreage in Texas. Therefore it was believed that growers east of Houston would benefit greatly from a Rice IPM program.

And indeed they have ben-

efited. During the 3 year pilot program, total production costs in IPM scouted fields was reduced, with herbicide cost nearly \$10 per acre lower and insecticide costs reduced as well. In the first year 1343 acres were enrolled in the program, with that number climbing to 1680 acres in 2001. The cost per acre to farmers has stayed below \$10 per acre in all four years of the program. The range in yields (expressed in pounds per acre as dry weight) was also evaluated. The high yield in the IPM and non-IPM fields was not significantly different; however, the difference between the high and low yield was much less in the IPM program fields (3472 pound range) as compared to the 5075 pound per acre range in the non-IPM fields. The value of IPM scouting is apparent when one considers the difference in the low yields. In other words, IPM programs help to prevent problems. This clearly demonstrates that the program has been a success. Those involved in the project, including

Jack Bauer who is the steering committee chairman, lobbied the state legislature for a position to be added within the extension service for an IPM agent. Unfortunately this did not happen, but in spite of that the consensus was to continue the program and build on the success of the initial 3 years.

For now, Kelby will continue to coordinate the IPM Program, which includes extensive record keeping, hiring and training of scouts, and insuring that the program is run according to the needs of the producer. Many of the Beaumont Center scientists have participated in the program including Mo Way, Fred Turner, Jim Stansel, Robert Weatherton and Toni Marchetti (retired). Arlen Klosterboer and Joe Krausz, at the College Station campus, also assist in disease evaluation. The program is an excellent example of how producers, extension agents and researchers can work together to improve agricultural sustainability in Texas. ✱

Article and photos by Jay Cockrell.



Kelby with his son Clayton and daughter Amanda, giving showmanship lessons to first year 4-H kids.

Integrated Pest Management continued...

emphasized, and the project expanded the use of applied ecology and modeling to better evaluate the impact of pest and natural enemy species in crop systems. Their focus was on alfalfa, apples, cotton and soybeans.

In 1984 the CIPM Project ended and funds were redirected to the USDA Regional IPM Program which consists of four regions; the North East, North Central, Southern and Western. Each region concentrates on crops grown in that area, capitalizing on the scientific expertise residing within the region. Each program is structured to plan, develop and implement programs needed in their region, with cooperation encouraged between regions. The Regional IPM Program continues to provide funding



Dr. Vern Stern, retired from UC Riverside, developed the concept of an economic threshold.

for research and extension activities, but its funding is limited and the project is less integrated than were the earlier Huffaker and CIPM projects. As a result, its impact on developing IPM programs and training scientists and consultants on the use of IPM has not been dramatic.

In recent years, the federal government has provided funds to establish a National IPM Network. This network is coordinated out of North Carolina State, <http://ipmwww.ncsu.edu/>, providing valuable information on IPM programs across the United States. Some states, most noticeably California, <http://www.IPM.ucdavis.edu/>, New York, <http://www.nysipm.cornell.edu/>, and Texas, <http://insects.tamu.edu/extension/extipm.html>, maintain comprehensive IPM computer websites as well. The oldest of these websites was initiated in California as part of the University of California Systemwide IPM Program. Today, this program receives in excess of \$2 million per year in research and extension funding to foster the development and implementation of IPM programs.

Texas maintains possibly the most effective statewide IPM program in the U.S. The program had its inception in the early 1970's and is a joint effort of Texas Cooperative Extension, the Texas Pest Management Association, and the Texas Agricultural Experi-

ment Station. Texas Cooperative Extension and the Texas Agricultural Experiment Stations provide the needed expertise to develop and implement IPM technologies in major commodities throughout the state, while the Texas Pest Management Association handles the daily routine of financial management of scouting programs and administration. In Texas, Cooperative Extension Specialist Dr. Tom Fuchs oversees 25 IPM Extension Agents statewide. Each IPM agent maintains one or more scouting programs. They work with a grower advisory committee that helps design the local IPM program and growers provide funds for scouting and implementation of the program. This is an excellent example of University working closely with farmers to improve production.



From left to right: Dale Mott, Extension Agent - IPM in Williamson/Milam Counties; Dr. Tom Fuchs, Extension Specialist and IPM Coordinator; Justin Sladek, IPM Intern.

At a local level, in Jefferson County, the Rice Integrated Pest Management Program was conceived in 1997 when Jefferson County producers met with representatives of the Texas Pest Management Association (TPMA) and Texas Cooperative Extension. They recognized the need producers in the Eastern zone had for a scouting program based on IPM principles, and implemented the project in 1998. A producer may enroll any portion of their land in the program, for roughly \$10 an acre, and a scout will evaluate the crop for pests - including weeds, diseases and insects, and nutrient deficiencies throughout the growing season. The rice IPM program is coordinated and implemented by extension agent Kelby Boldt, with input and training from Beaumont Research Center scientists Mo Way, Fred Turner, Arlen Klosterboer and Toni Marchetti (retired). The program has been successful in making marginal

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IPM continued...

fields profitable, as well as reducing unnecessary use of pesticides and fertilizers. For more information contact Kelby Boldt at 409-835-8461.

On the international scene, the United States Agency for International Development (US/AID) funded the first large-scale effort on IPM. This project provided technical assistance on pesticide use and pest management to developing countries. Administered by



Dr. Ray Smith in 1997 at a dinner in his honor, along with Dr. Perry Lee Adkisson, as they were joint recipients of the World Food Prize. Ray was a driving force behind the Consortium for International Crop Protection (CICP). He died in 1999.

Photo courtesy of Donald Dahlsten, UC Berkley.

the University of California from 1971 to 1980, this project combined the expertise, experience and resources of nine U.S. universities to respond to the crop protection needs of developing countries. As a direct outgrowth of the US/AID project, the Consortium for International Crop Protection (CICP) was formed in 1978 by a group of U.S. universities, spearheaded by Ray Smith at UC Berkley. This organization is still in existence with its purpose being to assist developing nations to reduce food crop losses caused by pests, while advancing economically efficient and environmentally sound practices to ensure the health of rural and urban communities. Another noteworthy project of international scope was started in 1982 and continues today. This project initially focused on rice IPM in Indonesia, then subsequently expanded to several surrounding Asian countries. The coordinator for this project is Peter Kenmore, working for the United Nations Food and Agriculture Organization (FAO). Peter's group conducts IPM training workshops whose goal is to train the trainers. Farmers and scientists participating in the program learn the techniques, then go out into their respective communities and conduct training sessions to other farmers. The basic concept of this program has proven to be extremely successful in many developing countries that lack extension programs. *

Article by Ted Wilson and Jay Cockrell.

Researcher continued...

TRRF and is being expanded in 2001, in cooperation with Dr. Gene Reagan, sugarcane entomologist at LSU.

Experiments conducted in 1999 and 2000 at Ganado showed that stem borers, primarily MRB, did not attack rice until about panicle differentiation, even though adult MRB were collected in pheromone traps much earlier (before the permanent flood). This suggests that moths are actively choosing to lay eggs in rice at a specific stage of crop development. Information such as this can help pinpoint the best time to apply insecticides for maximum effectiveness. Research last year showed that Icon 6.2FS as a seed treatment at the rate commonly used by growers significantly reduced whiteheads compared to untreated rice. Intrepid 240SC and Confirm 2F also reduced whiteheads. In another experiment, Karate Z applied at the first sign of stem borer damage (about panicle differentiation) significantly reduced whiteheads. This research was expanded in 2001 to include evaluation of other novel insecticides, rates and timings.

With the help of Dr. Olga Mejia Ford, Mo's previous graduate student, the Entomology Project developed an IPM program for chinch bugs which revealed new information on biology, economic thresholds and



Derick Beach preparing a field for a conventional till vs stale seedbed study.

control. Similarly, in cooperation with Drs. Ed Rister, Jim Mjelde, Bart Drees and Jay Harper, the Entomology Program developed economic thresholds for the rice stink bug. Mo was also the first to recognize rice seed midges and the rice leaf miner as pests of Texas rice and management programs based on cultural controls were developed.

In an effort to assist Texas growers, Mo helped

continued on next page

Researcher continued...

gain “Crisis Exemptions” for pyrethroid insecticides to control outbreaks of the fall armyworm. This was a critical need, as the outbreaks were severe in some areas threatening stands and yields. In cooperation with Texas Wildlife Management Services, Mo helped set up the winter blackbird baiting program. State Representative Robby Cook was responsible for obtaining funding to hire additional employees to continue this program.

As far as professional service, Mo served as Secretary and Chair of the Rice Technical Working Group in 1996 and 1998, respectively. He is also active in the Texas Plant Protection Association and served as President of this organization in 1994. Mo is active in the Southwestern Branch of the Entomological Society of America. He is a member of their Youth Outreach Committee and routinely serves as a judge for the annual science fairs. He is also active in rice and soybean regional projects and has served as secretary and chair of these scientific exchange groups numerous times. Mo currently serves as a member of the USA Rice Federation’s Environmental Regulatory Committee, which cooperates with the EPA to register new pest management tools for the U.S. rice industry.

In addition, Mo is increasingly involved in international activities. He traveled to Sinaloa, Mexico in 1989 to learn more about the Mexican Rice Borer. He was a consultant for the Food and Agriculture Organization of the United Nations in 1991 when he traveled to China, South Korea and North Korea to study the introduction and spread of the RWW. In 1994 Mo visited with scientists in Costa Rica to try and set up collaborative research on the RWW, leafhopper and planthopper pests of rice. Mo also was invited to Nicaragua in 1998 to inspect rice for stink bug damage. He has been an invited speaker at international symposia in England, South Korea, Brazil and most recently Malaysia. Mo believes some U.S. farmers have the misconception that international scientific activities

benefit foreign competitors to the detriment of U.S. farmers. However, Mo has gained valuable information from foreign colleagues including improved testing methodology, acquisition of foreign germplasm useful to the U.S. rice industry, and knowledge of foreign rice production pest management tools to help convince EPA to register certain rice pesticides. In addition, foreign contacts have enabled Mo to hire dedicated, motivated graduate students.

With all of his research and extension responsibilities, Mo spends long hours at work. But he is quick

to point out that you can’t let work be your entire life. With his wife, Jeanie, who is a registered nurse, he enjoys reading, traveling, backpacking, and home improvement work. When Mo and Jeanie were married in 1984, Jeanie’s children were quite young, from 3 to 9 years old. Now the children are grown; Melissa (27) is the oldest, with a 9 month old baby girl named Madeleine. Melissa has a MS in Midwifery from the University of Texas. Stephanie (24) graduated from Texas A&M with a BS in Management Information Systems, and the youngest is Mike (21) who lives and works in Orange.

Mo also enjoys fishing, water sports, running and working out at the health club. He said that the fitness training really helps in the line of work he has chosen. Mo is also a mentor in the “I Have A Dream Program” and serves as a counselor for foreign exchange students in the Beaumont Spindletop Rotary Club.

When complimented on the success of his program, Mo is quick to point out the efficiency and dedication of his crew. He strongly believes that a researcher can only be as effective as the people he has in the field, often working under hot, miserable conditions. Mo also gives much credit to the work done by the secretarial staff, who help in preparing reports and papers for publication. In addition, the Eagle Lake staff headed by Jack Vawter provides significant support for Mo’s projects. He considers all the research station staff to be extended family, and believes these close relationships strengthen the Beaumont Center. *

Article by Jay Cockrell.



Mark Nunez inspects plants in the greenhouse for insect damage.

Pest of the Month

Black Faced Leaf Hopper:

A potential pest of rice from emergence through harvest.

The black-faced leafhopper, *Graminella nigrifrons*, is a sporadic pest of rice. This small insect has piercing-sucking mouthparts, similar to the rice stink bug. The adult is about 1/8" long, has wings and is light green, yellow or tan in color, depending on the region. Females lay eggs in rice plants and when the nymphs hatch they begin feeding immediately. Several nymph stages occur before the adult stage is reached.

This is a multi-generation insect which can be found on rice from emergence all the way through ra-



Adult leafhopper

toon. Populations seem to build up to dangerous levels late in the season. Severe feeding can cause bronzing of the foliage and reduction in yield and quality. High populations are evidenced by abundant cast skins and the presence of black sooty mold on the foliage. This fungus grows on the sweet "honeydew" excreted by the leafhoppers during feeding.

The Entomology Project has collected more than 1000 leafhoppers in 10 sweeps in heavily infested fields! More research needs to be conducted to develop accurate economic injury levels for this pest. Leafhoppers can be controlled most effectively with Icon 6.2FS, Karate KC/Z and Sevin XLR Plus. For more information contact Mo Way at 409-752-2741 ext 2231. *

Article by Beaumont Center Entomologist Dr. Mo Way.

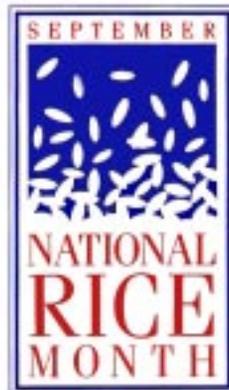


Ariel photo of a rice field heavily infested with leafhoppers, showing the bronzing effect of foliar damage. Photo courtesy of Dan Bradshaw.



Adult stage, full face view showing characteristic black markings.

CELEBRATE



This September will mark the 11th annual National Rice Month celebration. This event was established in 1991 by a presidential proclamation to increase awareness of rice, and recognize the contribution made by the U.S. rice industry to America's economy.

The popularity of rice continues to grow in the United States, as rice consumption here is at an all time high of 27.1 pounds per person. With its versatility, nutritious benefits and ease of storage and preparation, it is no wonder Americans are consuming more rice than ever before.

Rice is one of the most important foods in the world, being a staple food for most of the world's population. In 2001 U.S. rice farmers are expected to harvest approximately 3.1 million acres, and 90% of the rice consumed in the U.S. is grown here.

Given these facts, it is clear that we all benefit by promoting rice consumption through events like this year's National Rice Month. For more information about activities see www.nationalricemonth.com *

RiceTec Basmati Patent Decided

"Solomon-like." That's the term that RiceTec, based in Alvin, Texas, used to describe the new U.S. Patent Office ruling on its 4-year dispute with Indian organizations over use of the term *basmati* for its aromatic, long-grain rices. The ruling "resolves the dispute favorably for both sides," RiceTec said.

RiceTec retains the right to market its products using the name "basmati," which the U.S. government has ruled is a generic name. Said Rice Tec, "The only protection we ever sought was to protect our rice from competitors in the United States."

The problem began in 1997, when RiceTec patented three rice lines it had developed as "Basmati Rice Lines and Grains." RiceTec has also used the term "American basmati" or "Texas basmati" on labels of its aromatic, long grain Texmati rice. *

From PlanetRice 8-28-01, Tom Hargrove, Editor

State, National and International News

Thirty Second Annual Texas Rice Festival

The Texas Rice Festival celebrates everything to do with rice and good times! Chartered in 1969, the festival is a weeklong event held annually in Winnie, beginning the last weekend in September with the BBQ cook-off weekend. The event is held as a celebration of the rice harvest and features family entertainment with down-home country flair. More than 100,000 people crowd the Winnie Stowell Park annually, starting off the festivities with a BBQ and fajita cook-off, Open Horse Show, TRF Queen Coronation and Kick-off Dance. On Sunday afternoon the finale of the cook-off weekend will be the 4th Annual NBHA 'Rice Run' put on by the National Barrel Horse Association.

Festival activities the next week begin on Wednesday, October 3rd and include Wright's Amusement Carnival (with a pay-one-price bracelet available for each day), vendor booths, street dances nightly, rice education exhibits and a multi-million dollar farm equipment display. The entertainment is non-stop along with lots of great food, including rice balls, gumbo, etouffe, pistolettes, blooming onions, crab balls, boudain balls and many other delicacies. The event is renowned for its outstanding cuisine.

Wednesday, October 3rd, is Cajun Night and features entertainment by Kingfish and Damon Troy. Thursday the TRF will showcase Lil Al Jackson, Jason DeLeon & Cajun Blend, and the crowd pleas-

ing Zydeco man, Wayne Toupes.

Friday, October 5th is dedicated to youth with the 4-H and FFA Livestock Show, TRF Junior Queen Contest, Miss LaPetite Contest, Little Rice King Contest, Diaper Derby, Baby Costume Contest, Face Painting and much more. Later that evening at the street dance, visitors will swing to the music of the 50's with Johnny Dee & the Rockin' 88's.

Saturday, October 6th, the harvest celebration features non-stop entertainment beginning with the Grand Parade followed by live entertainment on two stages. Featured this year are Billy Joe Royal and Darryl Worley. Activities for the day also include a rice cooking contest, craft show, quilt exhibit, photography and art exhibits.

Each year the festival honors farmers and others who have contributed to the agricultural industry. This year's list includes Texas Rice Festival Honoree, Travis and Delores Pair of Winnie; Pioneer Farmer of the Year, G.D. "Pink" Heckaman of Hamshire; Farmers of the Year, John, Jerold and Jay Jenkins of Hankamer; and Young Farmer of the Year, Tony Armentor of Winnie. Parade Marshall for the 2001 event will be Jefferson County Judge Carl R. Griffith, Jr. of Beaumont.

Admission is \$5 for adults, \$2 for students, and children and seniors are free. For more information call 409-296-4404 or see www.texasricefestival.org

Mark Your Calendar

The annual USA Rice Outlook Conference will be held December 2 - 4, at the Union Station Hyatt

Regency Hotel in St. Louis, MO. The conference includes an economic overview of the domestic and international rice industry, season wrap-ups and current research activities on a state-by-state basis. In addition there will be presentations on timely topics of interest to those in the agricultural community. Registration materials can be obtained by calling the USA Rice Federation at 800-888-7423 or visit their website at www.usarice.com.

Consumer Demand Grows For Organic Foods

USA Rice Federation - According to a study conducted in March by Roper Starch Worldwide: more than six in ten Americans buy organic foods and beverages at least some of the time, 40 percent of Americans say organic foods will be a bigger part of their diet within one year, 50 percent predict organic food will play a bigger role in their lives over the next five years, and more than two-thirds say organics will be a major food trend in the new millennium. According to the Organic Trade Association, the organic industry has grown about 20 percent each year since 1990. With companies such as Kellogg, Heinz, General Mills and Dole packaging organic products, it is predicted we'll be seeing more advertising and brand marketing in the organic segment.

Gulf Pacific Buys New Brands

Gulf Pacific announced last month the purchase of the Eminence and Texas Homegrown rice brands from Affiliated Rice Milling, Inc. of Alvin, Texas. Gulf Pacific will begin production of the two brands immediately. *

State Breeder to Join the Beaumont Center Staff

The Beaumont Center is currently interviewing for a State Breeder position. We are very excited about the opportunity to expand current research and strengthen the Beaumont/Eagle Lake Centers, enhancing our ability to benefit Texas producers. Four candidates are being interviewed. Growers and other interested parties have a chance to meet with the breeder applicants on the following dates:

September 11th – 1pm – Beaumont Center

September 13th – 9am – Eagle Lake

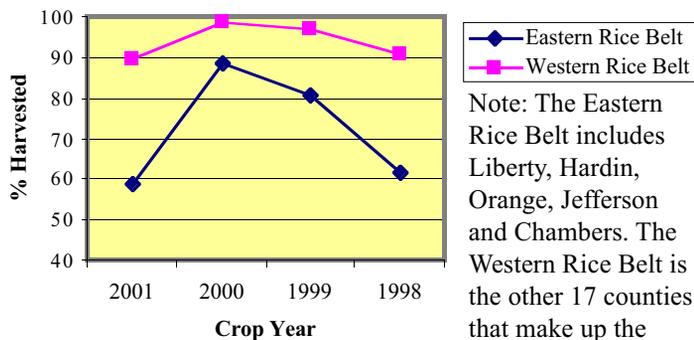
October 2nd – 1pm – Beaumont Center

October 4th – 9am – Eagle Lake

Please take this opportunity to learn more about the potential candidates and provide feedback to the Search Committee members. Contact Ted Wilson at 409-752-2741 ext 2227.

Rice Crop Statistics Report

Acreage Harvested as of Aug 30



Note: The Eastern Rice Belt includes Liberty, Hardin, Orange, Jefferson and Chambers. The Western Rice Belt is the other 17 counties that make up the Texas Rice Belt.

Professor and Center Director: L.T. (Ted) Wilson

lt-wilson@aesrg.tamu.edu

Staff Assistant: Jay Cockrell

j-cockrell@aesrg.tamu.edu

Texas A&M University System Agricultural
Research and Extension Center
1509 Aggie Drive, Beaumont, TX 77713
(409)752-2741

Access back issues of *Texas Rice* at
<http://aesrg.tamu.edu>

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Texas A&M Dept. of Entomology Insect
Photos

<http://insects.tamu.edu/imagegallery/>

California Rice Commission-Uses of Rice
Straw

<http://www.ricestraw.org/>

Natural Resources Defense Council

<http://www.nrdc.org/>

Texas Pest Management Association

<http://www.tpma.org/>

WWW Virtual Library – Agriculture

<http://cipm.ncsu.edu/agvl/index.cfm>

National IPM Network

<http://ipm-www.ento.vt.edu/nipmn/>

University of California IPM

<http://www.ipm.ucdavis.edu/>

IPM Access

<http://www.efn.org/~ipmpa/>

Cornell IPM Primer

[http://www.nysaes.cornell.edu/ipmnet/
IPM.primers.html](http://www.nysaes.cornell.edu/ipmnet/IPM.primers.html)

The Handbook of Texas Online

[http://www.tsha.utexas.edu/handbook/online/
index.new.html](http://www.tsha.utexas.edu/handbook/online/index.new.html)

Consortium for International Crop Protection

<http://ipmwww.ncsu.edu/cicp/about.html>

Web Resources

Texas A&M University System
Agricultural Research and Extension Center
1509 Aggie Dr.
Beaumont, TX 77713



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