



# Texas Rice

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

October 2002 Volume II Number 8

## Organic Agriculture: A Growing Industry

A small but increasingly important alternative to conventional agricultural production is what many refer to as the organic/sustainable movement. Although many in the U.S. view organic agriculture as a late 20<sup>th</sup> century phenomena, its roots date back much further in time.

Rudolf Steiner (1861 – 1925) presented his theories on biodynamic agriculture in Koberwitz, Germany in 1924. He believed that food production involved more than natural inputs and sustainable management practices, but encompassed a spiritual realm as well. The Demeter Association began certifying biodynamic farms in the 1930's and continues today representing over 3,000 producers in 35 countries.

Closer to home, a founding member of the Soil Association of America was J.I. Rodale, the Pennsylvania businessman and farmer who started Rodale Press, and *Organic Gardening* magazine in 1942. Rodale brought 'organic' to backyard gardeners across the U.S., and today the magazine boasts 300,000 subscriptions in over 20 countries worldwide.

Interest in organic agriculture in America was also fueled by the 1962 release of *Silent Spring*, a book written by Rachel Carson that warned of the dangers of pesticide

misuse.

On the federal scene, early support for organic farming came from Henry A. Wallace, who was the U.S. Secretary of Agriculture from 1932 to 1940. He also served as Vice President of the United States from 1940 to 1944, and Secretary



The USDA Organic label can be used on products that have been grown and certified according to National Organic Program standards. The law went into effect on October 21, 2002.

of Commerce from 1945 to 1946. He believed in the value of scientific research and furthered the advance of agriculture and environmental quality by working to maintain soil quality through the Agricultural Adjustment Act (AAA).

Wallace was a tireless supporter of 'conservation' farming, and believed that the continuing loss of U.S. topsoil was a national crisis.

In honor of his achievements, the Henry A. Wallace Institute for Sustainable Agriculture in Beltsville, Maryland was established in 1983 as a USDA Research Center. Its goal is to ensure soil, air and water quality for farmers. The Institute is heavily involved in alternative agriculture and organic farming.

The organic agriculture movement is far from being a new fad in farming. According to the Economic Research Service, "Organic farming is one of the fastest growing segments of U.S. agriculture, with organic cropland more than doubling in the U.S. during the 1990's." (ERS *Agricultural Outlook*, April, 2000). Consumer demand for organic products in the U.S. is increasing at a phenomenal rate, with total U.S. sales in 1990 at 1.2 billion, growing to \$7.8 billion by 2000, (International Trade Centre Report, 2001).

Organic farming is the practice of producing food without the use of man made pesticides, herbicides, and fertilizers. This method of production has become more popular over the past 20 years, fueled by consumer demand. Organic crops demand a premium price in the marketplace, presenting growers the opportunity to capitalize on this niche market. But, along with rapid expansion is the need for quality

continued on page 7

## From the Editor...



As the field season comes to a close, so does the second year of *Texas Rice*. The readership for *Texas Rice* is rapidly approaching 1300, with 370 copies sent by mail and an additional 946 copies sent by email.

We end the last issue of 2002 with a focus on organic production. Organic agriculture is fairly new to most of us and still a very small part of the US agricultural economy. Nevertheless, organic agriculture represents possibly the most rapidly growing segment of US agriculture. Thirty years ago, few people had heard of organic foods. Today, organic agricultural produce is readily available across much of the US.

Organic production is perceived by some as an offshoot of the peace movement of the 1960's and 70's. Although a back to earth philosophy permeates the organic agriculture movement, it is much more than this. In many areas of the US and for an increasing part of our society, organic agriculture has become big business.

Organic produce brings a premium over conventionally produced produce. Organic rice, for example, brings the producer about \$14 per cwt, far more than conventionally produced rice. US sales of organic produce increased from \$178 million in 1980, to \$1.2 billion in 1990, to \$7.8 billion in 2000. All indications are that the current rate of increase in the US will continue for the foreseeable future. If this holds to be true, US organic production could top \$40 billion by 2010. From such a humble beginning, organic agriculture has emerged as a vibrant and strong economic force.

What exactly is organic agriculture? From a government regulatory perspective, organic agriculture is the production of food, fiber, and feed without the use of synthetically derived fertilizers and pesticides. Organic agriculture is often confused with Sustainable Agriculture. Although the Sustainable Agriculture movement shares many of the tenants of organic agriculture, it differs by allowing the use of some synthetic fertilizers and pesticides. The issue with Sustainable Agriculture is not whether synthetic in-

puts are used but that agricultural production must be both economically viable and environmentally sustaining.

In addition to organic agriculture and sustainable agriculture, we also often hear the terms IPM and ICM used when discussing agriculture. IPM or Integrated Pest Management has its roots with entomology and can be traced to the mid-1950s. The definition for IPM has evolved through the years from a largely insect management focus to a crop management focus. IPM aims at maximizing both farmer and societal benefits, and integrates available management techniques in a manner that is ecologically sound, but not necessarily ecologically natural.

ICM or Integrated Crop Management is a concept that has only recently gained national attention. ICM has its roots in the plant and soil sciences disciplines and is increasingly used synonymously with IPM.

US agriculture has seen many changes over the past few decades. Conventional agriculture will undoubtedly remain the backbone of US agriculture production, but alternative production methods such as Organic Agriculture in many cases deserve a close look.

I hope you enjoy reading *Texas Rice* as much as we enjoy producing it.

Sincerely,

A handwritten signature in black ink that reads "J. T. Wilson".

Ted Wilson

Professor and Center Director

### Inside This Issue

Cover Story:

*Organic Agriculture: A Growing Industry*

Soil Fertility and Biodiversity in Organic Farming .....	3
Bulk Export Facility .....	4
Rice Sales to Cuba .....	4
Grower Profile: Triangle Rice and Cattle Company .....	5
Future Farmer Promotes Rice .....	6
Organic Farming Research In Europe .....	9
Glomalin Research .....	10
State, National, and International News .....	11
Upcoming Events .....	12

## Research in the News...

# Soil Fertility and Biodiversity in Organic Farming

*An understanding of agroecosystems is key to determining effective farming systems. Here we report results from a 21-year study of agronomic and ecological performance of biodynamic, organic, and conventional farming systems in Central Europe.*

Organic agriculture is a method of farming that forbids the use of chemical pesticides and fertilizers. Consequently, poor yields have been a concern for farmers wishing to enter this potentially high value market. The lack of financial support for organic research has exacerbated the problem forcing farmers into a trial and error type of production.

Recently, Swiss agronomist Paul Mäder of the Research Institute of Organic Agriculture in Frick, Switzerland, and David Dubois of the Swiss Federal Research Station for Agroecology and Agriculture in Zürich, published the results of a 21 year study that showed that properly managed organic acreage is a viable alternative to conventional farming systems.

“This study is as complete a picture as we have from anywhere,” says Phil Robertson, and agricultural ecologist at Michigan State University. The research was done in the field with four management systems. One system was treated with conventional fertilizers and chemicals. Another system simulates an integrated approach that includes manure fertilizers with conventional chemicals. The two strictly organic management systems used only manure fertilizers and mechanical weeding. Of these two, one is a system that is called biodynamic farming, which utilizes a variety of herbs blended with compost manure. According to biodynamic principles, the purpose of the herb blends is to stimulate biological activity in the soil, and enhance metabolic pathways within the plants.

Average crop yield was around 20% lower in the

two organic groups. This means that with far less fertilizer input (34% - 51%), one can still produce a crop organically and achieve 80% of the yield that would be possible conventionally.

According to this study, microbes were more numerous in the biodynamic soil than the standard organic, which were in turn both higher than the conventional soils. The soil in the organic plots appeared to be much healthier than the conventional plots, with as much as 40% more fungi that assist in plant nutrition being present. Due to the fact that nutrient cycling microbes are more plentiful and work more efficiently in soil enriched with organic matter, the plants are better able to utilize the necessary nutrients. Earthworms were also three times more abundant in the organic soil. Insect pests were kept at bay in the organic plots because there were twice as many spiders and other pest-eating arthropods present in the field.

The researchers concluded that “organically managed, legume-based crop rotations utilizing organic fertilizers are a realistic alternative to conventional farming systems.” \*

*From Science Magazine, volume 296, May 31, 2002. For the complete text of this study go to <http://www.sciencemag.org/content/vol296/issue5573/index.shtml#researcharticles>. Scroll down to the article “Soil Fertility and Biodiversity in Organic Farming” and choose the download format.*



A



B

Earthworm castings and weed seedlings were more frequent in the biodynamic plots (A) when compared with the conventional plots (B). Microbial activity was also higher in the two organically managed systems.

## Rice Belt Warehouse Secures Option for Bulk Export Facility

El Campo, Texas - Rice Belt Warehouse, Inc. and the Calhoun County Navigation District have reached an agreement which could lead to the construction of a bulk rice export facility at the Port of Port Lavaca – Point Comfort.

“The only elevator that handled the export of rice ceased operations several years ago, and all of the public export elevators in Texas have been leased to the major grain trading companies, leaving no practical way to export bulk rice produced in our area”, said Melvin Parker, President of Rice Belt Warehouse, Inc. Parker also noted that “Area planted to rice in the state of Texas has declined from nearly 600,000 acres in 1970, to just over 200,000 acres this year, and one of the major reasons for the drop in production has been the cost and difficulty of exporting.”

Mr. Robert H. Van Borssum, Port Director of the Port of Port Lavaca – Point Comfort, reported that “The Port took the lead early last year, agreeing to fund the matching portion of an “Agriculture Commodity Export Feasibility Study” coordinated by the Golden Crescent Regional Planning Commission. That study concluded that farmers in the 17-county area immediately surrounding the port need a direct outlet for their production, and would benefit from higher returns if they could export through our facilities. Our Board of Commissioners has now agreed to give Rice Belt Warehouse the exclusive option to turn these ideas into reality.”

Rice Belt Warehouse has over the past year worked closely with the Port, and with the consultant who wrote the feasibility study, to ensure that accurate and complete information on crops and markets in this region were included in the calculation. “Now, we are going to the next level” Mr. Parker said, “and over the next three months we will be putting together a business plan which takes into account the needs of the various crops, the markets we can service, the several different design proposals for the ship loading facility, and costs of construction and operations.”

“We are excited about the potential of this project – for the benefits it will bring to producers in Southeast Texas and other areas, and pleased that the Port of Port Lavaca – Point Comfort selected a local organization to spearhead the effort”, concluded Parker. \*

*For more information contact Andy Hewes at 281-558-4333.*

## Texas Rice Council

### “Needing a Few Good Men and Women”

The success of any organization depends on the level of participation from its membership. This is true for the Texas Rice Council. The great thing about our organization is that we can positively impact our industry and in turn, our individual farming operations. All we have to do is become involved. There are a number of ways that you can participate. For some, it is continuing to support our voluntary state check off. For others, it involves taking an active role in local community events like rice festivals, sponsoring September Rice Month activities, entertaining journalists, or hosting foreign rice delegations in your area. Some members are interested in leadership positions allowing them to help shape the direction and growth of the Texas rice industry.

The Texas Rice council is in the process of conducting elections for directors in all rice producing counties. The Rice Council Board wishes to encourage you to run for election in your area. We are excited about our programs and there is no better time than now for Texas producers to become involved and take an active role. *Bill Dishman*

## Total U.S. Rice Sales to Cuba Tops All Other Commodities

Havana, Cuba - The market development efforts of U.S. rice growers and millers have started to pay big dividends in Cuba.

Cuban officials recently announced that contracts to buy U.S. rice topped all other commodities following the U.S. Food and Agribusiness Exhibition here last week. The country’s official import agency, ALIMPORT, reportedly signed deals to purchase 90,000 metric tons of U.S. paddy rice and an additional 20,000 metric tons of milled rice.

“We hoped that maintaining a high profile at the exhibition would draw more attention to our product,” said Stuart Proctor, president and CEO of the USA Rice Federation. “It’s great to see a large increase in sales come on the heels of such a successful show.”

The recent successes have been years in the making, as rice millers and producers made several trips to Cuba to lay the groundwork to end the 40 year old embargo.

“The rice industry was instrumental in changing U.S. policy toward Cuba, achieving legal status for sales of U.S. agricultural commodities,” said Bob Cummings, vice president of international policy for the Federation. “The combination of political momentum generated from rice growing states and market development activities are beginning to pay off.” \*

*For more information contact USA Rice at 713-270-6699.*

## Grower Profile...

# Triangle Rice and Cattle Company

*When the market for conventional rice dropped, the Savage family looked to organic production as a way to keep the family in business.*

Harley Savage is a third generation rice farmer with an eye for innovation. Six years ago, when the price of conventional rice had reached a twenty-year low, Mike Doguet, of Doguet's Rice Mill in Beaumont, approached Harley about growing contract acreage of organic rice. The first year they put 60 of their 1200 acres into organic, and in 2002 the number had risen to 990 acres of Texas Department of Agriculture certified organic rice.

As the Savages transitioned to organic production, the learning curve was steep. With no research to rely on, they were forced into a 'trial and error' mode of farming to find a nutrient package that would work well for rice. In the early years, they tried fish emulsion and pelletized poultry litter, both with limited success. On a small plot, they tried Chilean Nitrate, a restricted product in the Texas Department of Agriculture Certification Program. This means a certified grower has to document extreme need and assure proper application procedures. The product is restricted because it is high in salts, and is mined in sensitive ecological areas. The Savages did not find that it was



(L to R) Kirby, Harley and Stewart Savage of Triangle Rice and Cattle Company.

very effective, as it acts like a highly soluble chemical fertilizer, with no long-term benefit to the soil.

In 2002, they used a fertilizer product from Nature Safe, (12-2-0) that is made from feather, meat, bone and blood meal, along with yeast, sugars, carbohydrates and humus. The product is manufactured in Kentucky, but there are distributors in Texas (*See Website Resources on the back page of this issue.*)

While the Savages feel the Nature Safe product is superior to any they've tried, there are some application issues that have to be worked out. Because organic fertilizers are slow release, they cannot be applied on the same schedule as chemical nitrogen, ie. at planting, post-flood and PD. Plans for next year are to apply 400 pounds of product (48 units of N) at planting, with the remaining 400 pounds at post-flood. This should give the nutrients time to assimilate and become available to the plants before the critical period at PD.

The Savages use Fehmel Dusting Service in Bay City for all their input applications, as this is more cost effective over large acreages. Water comes from the LCRA canal system, and they strive for early flood dates to help with weed control.

Harley said that this is where they need the most help from the Experiment Stations, to try and find an effective organic herbicide. Last year they hired high school workers to hand-rogue all 990 acres of the or-



Stew and Sarah Savage sitting atop a truck filled with organic rice. Harley's grandchildren may one day enter the family business, but only after attending college first.

continued on next page

## Grower Profile continued...

ganic rice. He also would like to see more work in organic nutrient management, so growers aren't forced into costly on-farm experimentation.

The major pest problems are from stinkbugs and grasshoppers. In the past they have tried garlic sprays and fish oil to combat these pests, with good results. Disease hasn't been a major problem, although they did have trouble with straightheads in Jasmine 85. According to researchers, this is a physiological problem that Jasmine seems more susceptible to than some other varieties.

The Savages sell their organic rice under contract to RiceTec in Alvin and Mike Doguet in Beaumont. Harley said they tried to package under their own label some years back, but found marketing and distribution to be a problem. The struggle for shelf space in grocery stores is a battle fiercely fought by the major brand names, leaving little room for independent producers.

\* \* \* \* \*

Harley's ancestors came to Texas in 1823 as part of the original Austin colony, where they settled in Matagorda County and began raising cattle. In 1920, Harley's grandfather, dad and uncle started a partnership called Stewart Savage & Sons, raising rice and cattle.

Rice became a larger part of the business when Harley began farming with his dad and brother under the name Triangle Cattle Company. Years later, continuing in the family tradition, Harley's two sons, Stewart and Kirby, joined the business and began operating under the name Triangle Cattle Company Rice Farms.

Harley and his wife Jane have 5 children – Suzanne, Debra, Diana and then the two sons who are involved in the family farming business. Stewart and his wife Tami have two boys, Stew (13) and Christopher (11). Kirby and his wife Kerry have two children also, Scott (15) and Sarah (12).

When asked if the grandchildren would continue in the farming tradition, Kirby said, "We certainly hope they will, if things continue to go well. But obviously college will be a priority. After that, we'll see."

The Savages have high hopes that organic production will provide a means to keep the family business going through these difficult times of low commodity prices and high input costs. \*

## Future Farmer Promotes Rice

When Grant Stoesser decided to participate in this year's Rice Promotion Contest sponsored by the USA Rice Federation as part of the September National Rice Month celebrations, he had it clear in his mind what he was promoting and why.

"I would like to win the scholarship, but that's not why I'm doing all this work," explained Grant. "I want to help this industry thrive, so I can farm rice like my dad, and his dad before him."

Grant is the younger son of Eileen and Ray Stoesser of Dayton, and rice farming has been a part of his life for as long as he can remember.



Grant Stoesser with Dayton Mayor Larry Harris signing a Proclamation for National Rice Month.

Grant kept a calendar of all his activities in September, and appropriately enough, he spent the first two days harvesting rice with his dad and older brother Neal. Then began a flurry of activity that included in-store demonstrations, visiting area businesses to display promotional signs, radio and newspaper interviews, and conducting a farm tour for his home school group.

Grant gave talks on the importance of the rice industry to 4-H groups, school students, the local Rotary Club and Lions Club. He met with elected officials, including State Representative Zeb Zbranek, and presented him with a videotape of the commercial he made to promote National Rice Month. The commercial aired on LDTV Ch 99 in Liberty throughout the month of September. He also sent a copy to Agricultural Commissioner Susan Combs.

From the faculty and staff of the Texas A&M Research and Extension Center, many thanks, Grant, for all your efforts promoting the Texas rice industry. \*

## Organic continued...

standards.

This prompted the USDA to become involved with organic agriculture a decade ago when they passed the Organic Foods Production Act of 1990 (OFPA). The primary focus of the act was to establish a national standard for the certification and marketing of agricultural products deemed to be organic. Through the act, the National Organic Program (NOP) was created. In 1994, this program appointed the first National Organic Standards Board (NOSB), a group that investigated existing organic practices in order to set regulations for the national program.

After much deliberation and research, the NOSB published the national organic standards rule. The rule established standards for organic production of crops, livestock, and handling of organic products in the U.S. The final rule was derived from the Organic Foods Production Act, recommendations from the National Organic Standards Board, a review of existing organic industry standards and practices, and over 300,000 public comments received from previous proposals. The rule establishes a number of requirements for producers and handlers of organic products. The major provisions are requirements for land, crop nutrients, crop rotation, pest management, livestock, processing and handling. USDA guidelines for certification and labeling of organic products make it possible for consumers to buy with confidence.

In 2002, with an extensive list of substances approved for organic production, the National Organic

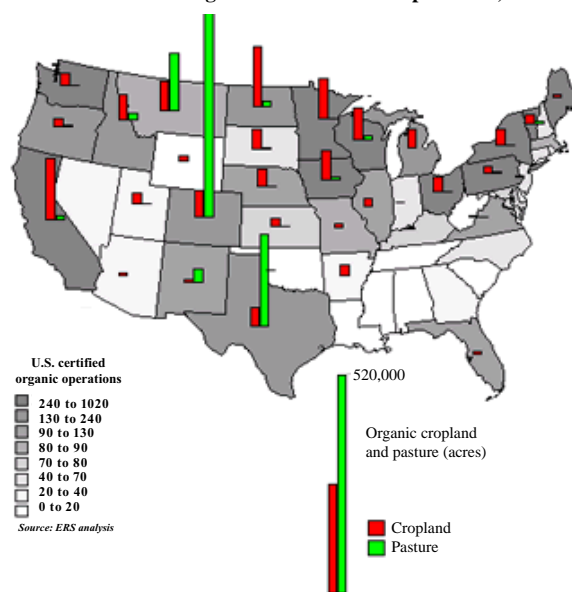
Program started to accredit state and private entities to certify organic farmland. To become accredited as an organic certifier, an application must be submitted and approved by the USDA. The application process requires applicants to document their ability to certify to national standards and to oversee their client's compliance with national regulations. The fee to become an accredited certifying agent of the USDA is \$500.

There has been some



Labels from accredited certifiers may also be used on packages to market organic products. This one from the Texas Department of Agriculture can be used in addition to the USDA logo.

U.S. Certified Organic Farmland and Operations, 2001



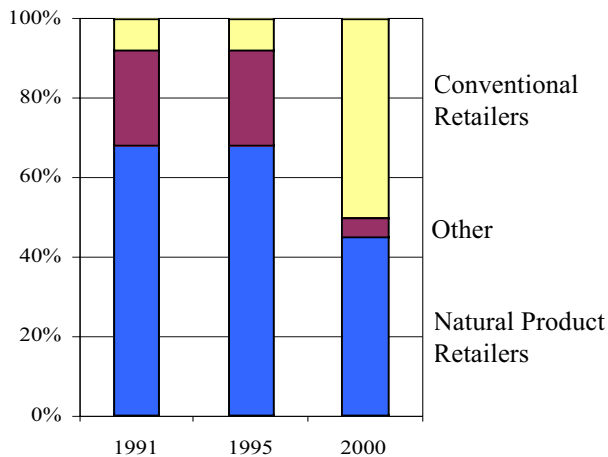
confusion about the difference between a State Organic Program (SOP) and a state certification program. A state certification program is equivalent to a private or foreign certification program in that it lacks enforcement power. These certifiers travel to farms and take soil, water, and foliage samples to ensure that there is not any residue from a substance that is forbidden by the national standards. Buffer zones around organic farmland are also measured to ensure that sufficient space separates organic fields from those conventionally managed. This lessens the likelihood that prohibited substances will drift onto organic fields through the air. Once the certifier concludes that the operation meets all of the requirements and certifies the field, the farmer must keep detailed records for such things as fertilizer inputs, pest and weed control, and crop rotation.

If a state wishes to upgrade from a state certification program to a state organic program, the state is required to submit a plan to the USDA for approval to administer the National Organic Program within their state. If approved as a state organic program, the state has the opportunity to petition for requirements that go beyond the national standards. The Secretary of Agriculture reviews these requests and either approves or denies them depending on their legitimacy. In creating a state organic program, a state agrees to take on enforcement activities that would otherwise be the re-

continued on next page

## Organic continued...

Share of Organic Sales by Venue



Notes: Other is direct sales and exports.

Source: Natural Foods Merchandiser, Packaged Facts.

sponsibility of the National Organic Program. States do not have jurisdiction over the accreditation of certifying agents and cannot revoke accreditation. Currently there are no approved state organic programs, although many states that already have state certification programs have applied, including Texas.

Once the USDA accredits a state, private, or foreign entity, it is considered to be an agent of the USDA. Renewal is necessary every five years after the initial accreditation. When certifying in a state that has a State Organic Program, private certifiers will be held to the national standards, plus any additional standards that have been approved for that state.

The accredited certifying agents may set their own fees for the services that they provide to producers. The USDA does not determine the prices that certifiers charge; however, certifiers must submit a fee schedule to the USDA.

In addition to the rules governing organic production, the National Organic Standards Board devised a labeling system for all goods that are grown and certified as organic. The seal is available as a marketing tool to indicate that the products have been grown in conditions that are acceptable by the National Organic Program standards. The USDA Certified Organic label has a strict set of guidelines regarding its use. Only products that have been certified by an accredited agent may use the label. However, a certified business may only use the USDA logo if their product is "100% Organic" or "Organic" (containing at least 95% organic ingredients). Products made with 70-95% or-

ganic ingredients may use their certifier's logo on the information panel. Imported food may be sold as organic in the U.S., as long as the organic production policy in the country where it was grown is equivalent to our own NOP standards. Unless an agent of the USDA has certified the products that are imported, the imported products are not to use the USDA certified organic label. Some private certifiers have labels that are recognized around the world, easing the entry into foreign marketplaces.

Though state organic programs may have additional regulations depending on their individual environmental needs, the national regulations are the foundation for organic certification. This foundation provides consumers the assurance that the organic food they buy, often at a premium price, was produced under a common set of standards sanctioned by the United States Department of Agriculture. \*

## Organic Crop Insurance

In the past, crop insurance policies may not have covered production losses when organic management controls failed to control insect, disease, and weed pests. Such determinations were made because the insured had not complied with the definition of good farming practices contained in the Basic Provisions of the Agricultural Risk Protection Act. The Act was revised in 2000 and now requires that organic farming practices be recognized as good farming practices.

The regulatory changes that are needed to revise the Basic Provisions, which cover almost all crop provisions, cannot be made for the 2001 crop year. As a result, the Risk Management Agency (RMA) will recognize organic farming practices as good farming practices by providing coverage for organic producers by written agreement. If a written agreement is not requested for organic farming practices, current loss adjustment procedures will apply, i.e. appraisals for uninsured causes of loss will be applied when conventional farming practices would have prevented damage due to insects, disease, or weeds.

Premiums will be adjusted to recognize any additional risk associated with covering organic crop acreage. Coverage will be available beginning with the 2001 crop year for all crops with a March 15, 2001 sales closing date. This bulletin will remain active until incorporated into the FCIC 18010 Crop Insurance Handbook and FCIC 24020 Written Agreement Handbook. The estimated disposal date is December 31, 2002. For more information contact the Regional RMA office, which covers Texas, at 405-879-2700.

## Organic Farming Research In Europe

Organic agriculture has developed rapidly in Europe over the past 10 to 15 years. According to a survey conducted by Stiftung Ökologie and Landbau in 1999, 2.3 million hectares were managed organically by 92,646 farms in the member states of the European Union (EU) and the European Free Trade Association (EFTA). There are however, substantial differences between the countries. For example in Austria 10.1 percent of the area is organic while Portugal has only 0.6 percent in organic production.

Research in organic agriculture is currently conducted in almost all countries of Europe. The amount of on-going research is highest in Scandinavia and the German speaking regions of Europe. Research is conducted by private institutions, but also at universities and research stations, some of which dedicate all their activities to organic agriculture.

In Austria, Denmark, Germany and The Netherlands, universities have founded departments exclusively for the study of ecological agriculture. Many universities, institutes and research centres have facilitated research in ecological agriculture by making land and even entire farms available to researchers. The university of Kassel-Witzenhausen now has access to a 320 hectare farm, which may be the biggest trial farm in Europe. In many European countries supermarkets play an important role in funding organic farming research, mostly related to quality, storage and processing.

In Southern, Central and Eastern Europe, research

activities depend heavily on individuals..Money used for organic farming research is often allocated originally for other research fields, such as integrated farming.

Research in the EU focuses on production issues, i.e. rotations, fertilization, weed control, cultivation techniques, varietal development and manure management.

Work is being conducted to identify specific areas where knowledge is lacking and future research is needed. Areas with increased research priorities are energy supply and management of natural resources, animal husbandry, agro-ecology, biodiversity, marketing, processing, and the social and environmental impact of conversion to organic agriculture. Finding ways to keep plant breeding, organic production and processing free from genetic engineering is another challenge for research.

Often research results from the core of Europe cannot be transferred to other climatic regions. This applies for example to the Mediterranean countries, where a lot of research on production techniques is still needed. In Ireland for instance, organic farmers have problems with fluke and worms in their herds, therefore research on this is urgently needed. Iceland needs more information on nitrogen fixation and supply of organic fertilizers under Icelandic conditions.

Given that research on organic agriculture is conducted at universities and institutes all over Europe, there is a need for improvement of the communication between researchers as well as between researchers and farmers. The International Federation of Organic Agriculture Movements was originally founded with the aim to coordinate research in organic

agriculture, and several IFOAM groups now exist in Europe. In addition, several research networks exist which are funded by the EU governments, fueled by consumer demand for organic products. \*

*Excerpted from an article by H. Willer and U. Zenger. The complete article can be found in the FAO Corporate Document Repository, which houses FAO documents and publications, as well as selected non-FAO publications, in electronic format. It enables users to easily access the accumulated knowledge and information produced by FAO. Go to <http://www.fao.org/documents>.*

Overview of World Markets for Organic Food and Beverages

Markets	Retail Sales (million US\$) 2000	% of total food sales - ca.	Expected growth - medium term	Retail Sales (million US\$) 2001
Germany	2,100-2,200	1.6-1.8	10-15	-
U.K.	1,100-1,200	1.0-2.5	15-20	-
Italy	1,000-1,050	0.9-1.1	10-20	-
France	800-850	0.8-1.0	10-15	-
Switzerland	450-475	2.0-2.5	10-15	-
Denmark	350-375	2.5-3.0	10-15	-
Austria	200-225	1.8-2.0	10-15	-
Netherlands	275-325	0.9-1.2	10-20	-
Sweden	175-225	1.0-1.2	15-20	-
Belgium	100-125	0.9-1.1	10-15	-
Other Europe*	400-600	-	-	-
Total (Europe)	7,000-7,500	-	-	8,500-9,000
U.S.A.	7,500-8,000	1.5-2.0	20	9,000-9,500
Japan	2,000-2,500	-	-	2,500-3,000
Total ca.	17,500	-	-	21,000

Source: International Trade Centre, WTO, January 2002, based on trade estimates.

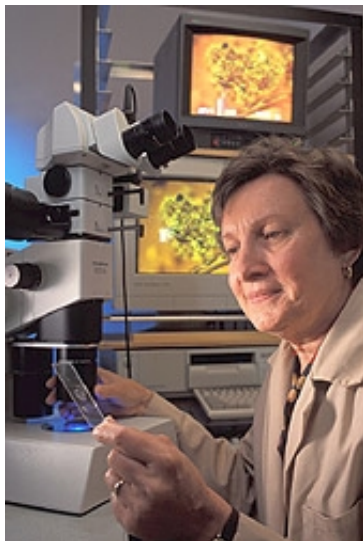
## Glomalin: Hiding Place for a Third of the World's Stored Soil Carbon

A sticky protein seems to be the unsung hero of soil carbon storage. Until its discovery in 1996 by ARS soil scientist Sara F. Wright, this soil “super glue” was mistaken for an unidentifiable constituent of soil organic matter. Rather, it permeates organic matter, binding it to silt, sand, and clay particles. Not only does glomalin contain 30 to 40 percent carbon, but it also forms clumps of soil granules called aggregates. These add structure to soil and keep other stored soil carbon from escaping.

As a glycoprotein, glomalin stores carbon in both its protein and carbohydrate (glucose or sugar) subunits. Wright, who is with the Sustainable Agricultural Systems Laboratory in Beltsville, Maryland, thinks the glomalin molecule is a clump of small glycoproteins with iron and other ions attached.

Glomalin is causing a complete reexamination of what makes up soil organic matter. It is increasingly being included in studies of carbon storage and soil quality. In fact, the U.S. Department of Energy, as part of its interest in carbon storage as an offset to rising atmospheric carbon dioxide (CO<sub>2</sub>) levels, partially funded a recent study by lab technician Kristine A. Nichols, a colleague of Wright's. Nichols reported on the study as part of her doctoral dissertation in soil science at the University of Maryland.

That study showed that glomalin accounts for 27 percent of the carbon in soil and is a major component of soil organic matter. Nichols, Wright, and E. Kudjo Dzantor, a soil scientist at the University of Maryland-College Park, found that glomalin weighs 2 to 24 times more than humic acid, a product of decaying plants that up to now was thought to be the main contributor to soil carbon. Another team recently used carbon dating to estimate that glomalin lasts 7 to 42 years, depending on conditions.



In her Beltsville laboratory, USDA soil scientist Sara Wright examines a soil aggregate coated with glomalin, a soil protein she identified in 1996.

Forests, croplands, and grasslands around the world are thought to be valuable for offsetting carbon dioxide emissions from industry and vehicles.

Arbuscular mycorrhizal fungi, found living on plant roots around the world, appear to be the only producers of glomalin, which gives soil its tilth. Wright named glomalin after Glomales, the taxonomic order that arbuscular mycorrhizal fungi belong to. The fungi use carbon from the plant to grow and make glomalin. In return, the fungi's hair-like filaments, called hyphae, extend the reach of plant roots. Hyphae function as pipes to funnel more water and nutrients—particularly phosphorus—to the plants.

As a plant grows, the fungi move down the root and form new hyphae to colonize the growing roots. When hyphae higher up on the roots stop transporting nutrients, their protective glomalin sloughs off into the soil. There it attaches to particles of minerals (sand, silt, and clay) and organic matter, forming clumps. This type of soil structure is stable enough to resist wind and water erosion, but porous enough to let air, water, and roots move through it. It also harbors more beneficial microbes, holds more water, and helps the soil surface resist crusting.

Wright also found that glomalin levels are maintained or raised by no-till practices, leguminous cover crops and reduced phosphorus inputs.

Says Wright, “We need to learn a lot more about this molecule, though, if we are to manage glomalin wisely. Our next step is to identify the chemical makeup of each of its parts, including the protein core, the sugar carbohydrates, and the attached iron and other possible ions.”

“Researchers have studied organic matter for a long time and know its benefits to soil. But we're just starting to learn which components of organic matter are responsible for these benefits. That's the exciting part of glomalin research. We've found a major component that we think has a strong role in the benefits attributed to organic matter—like soil stability, nutrient accessibility, and nutrient cycling.” \*

*Excerpted from the September 2002 issue of Agricultural Research magazine. This research is part of Soil Resource Management, an ARS National Program (#202) described on the World Wide Web at <http://www.nps.ars.usda.gov>.*

# State, National and International News...

## **Indonesia to Buy U.S. Rice: PL-480**

Indonesia has received the authorization to purchase \$19 million of U.S. rice under a U.S. PL-480 (Title I) food aid agreement today. The authorization was issued under the Title I credit sales agreement of Aug. 2, 2002. The authorization provides for approximately 85,000 metric tons of long-, medium-, or short-grain milled rice, brown rice for processing, or rough rice, packed in polypropylene or burlap bags; in bulk; or in bulk with polypropylene or burlap bags. Such rice shall grade U.S. No. 5 or better and shall contain not more than 20 percent broken kernels. Milled rice shall be either well milled or reasonably well milled.

The contracting period is Sept. 24 through Sept. 30, 2002, and the delivery period is Oct. 15 through Dec. 31, 2002. Delivery will be to importer, free alongside vessel (f.a.s.) in the case of rice in bags, or free on board vessel (f.o.b.) in the case of rice in bulk, U.S. port(s). F.o.b. vessel shall mean delivery at discharge end of loading spout.

---

## **Industry Representatives Visit Cuba**

USRPA - In an unprecedented tour of the island, a group of Texas industry representatives were privileged to meet with the trade and interested parties in Cuba for several days last week. The group went to participate in a major American television documentary that is to be aired later this month.

U S Rice Producers Association President & CEO Dwight Roberts,

rice farmer and rancher Loy Sneary, Dale Artho of the Texas Grain Sorghum Board; Dinah Weil, representing the cattle industry and Judith Jackson, representing the produce industry, all from Texas, got a firsthand account of life in Cuba and what the future holds for possible lifting of the sanctions on imports.

“It is unfortunate that Texas is unable to take advantage of this market for so many of our products”, stated Roberts. “So near and yet so far - the people of Cuba need our resources and we need their markets.” He continued. “We’ve got to find a way that is advantageous to all concerned.”

The team visited with Cuban Ministry of Economy and Planning and officials of Alimport, the central importer of U.S. agricultural products. They also toured the International Trading House. This is the Cuban company responsible for tourist supplies for Cubanacan, one of the largest and most important tourist companies in Cuba.

“This trip was a real eye-opener” said Sneary. “The people are hospitable and very gracious. It was apparent that they are also a hard working people as evidenced by the farms I saw that have been made into places of real natural beauty.”

“We will continue to work with Congress to open this market,” stated Roberts. “We are only hurting ourselves, the Texas exporters as well the rest of the United States, if we continue with sanctions that haven’t worked in over 40 years. It’s time to move on. Let’s roll!” he concluded.

## **New Sweetclover Variety**

VERTON - A new sweetclover breeding program conducted by Texas Agricultural Experiment Station researchers promises to give an old legume new life in central Texas and parts of eastern Texas. Drs. Gerald Evers and Ray Smith are developing a new sweetclover, with thin stems and a low coumarin content.

When sweetclover hay is not dried properly and becomes contaminated with mold, the coumarin converts to dicoumarol, a compound similar to modern blood thinners. Cattle eating the contaminated hay can experience internal bleeding, and in some cases, die.

As with other legumes, sweetclover captures nitrogen from the air, lessening the need for expensive nitrogen fertilizer. Managed correctly, legumes can fix from 75 to 100 pounds of nitrogen per acre. “After World War II, however, cheap nitrogen fertilizer came on the scene, and all legumes lost favor,” said Smith.

In 1999, recognizing the need for improved legumes, Evers and Smith identified a low coumarin, biennial northern type sweetclover called Denta. Smith crossed Denta with Emerald, a thin stemmed clover, and evaluated the first hybrids at the Overton Center in early fall of 2001. They then produced seed from Denta-Emerald hybrids in the spring of 2002. If all goes well this fall, the two Experiment Station researchers expect the new sweetclover variety to be available to producers by 2005.

*Article by Robert Burns. For more information contact Dr. Gerald Evers or Dr. Ray Smith (903) 834-6191.*

## Upcoming Events

January 14, 2003 - **Agricultural Finance Seminar**  
Winnie Stowell Park Community Building  
Talks include rice outlook, beef outlook and farm bill update. Meal served, everyone invited.  
9am - 12 noon, RSVP to Kelby Boldt 409-835-8461.

January 21, 2003 - **Jefferson Co. Rice Symposium**  
Texas A&M Research Center in Beaumont  
Tentative topics include new variety releases, liquid fertilizer, Clearfield varieties, chicken litter for rice.  
Evening meal served, everyone invited, 4pm - 9pm,  
RSVP to Kelby Boldt 409-835-8461.

January 23-24, 2003 - **The National Conservation Cotton and Rice Tillage Conference**  
at the Radisson Astrodome Hotel in Houston.  
Learn about current programs and the latest technology. There will be breakout sessions on a variety of subjects, a trade show area and a reception. The Texas Agriculture Commissioner Susan Combs will give the opening address. For more information contact the USRPA at 713-974-7423.

February 11, 2003 - **Texas Rice Council Annual Meeting**, Harris County Extension Center, #2 Abercrombie Drive, Houston.  
Meeting from 10am - 12 noon, lunch served.  
Texas Rice Council President Bill Dishman and the Board of Directors would like to encourage anyone interested in the rice industry to attend. Besides the regular business portion of the meeting, they will have presentations concerning the Farm Bill Conservation programs, showing farmers how these programs can put money in their pocket.

Professor and Center Director: L.T. (Ted) Wilson  
[lt-wilson@aesrg.tamu.edu](mailto:lt-wilson@aesrg.tamu.edu)

Ag Communications Specialist: Jay Cockrell  
[j-cockrell@aesrg.tamu.edu](mailto: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>

*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 Ted Wilson and Joel Pace. Editing by Ted Wilson, Jay Cockrell and Tammy Tindel. Technical support by Jim Medley. Information is taken from sources believed to be reliable, but we cannot guarantee accuracy or completeness. Story ideas and comments are encouraged.

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



NONPROFIT  
ORG.  
U.S. POSTAGE  
PAID  
BEAUMONT, TX  
PERMIT NO. 367

## Web Resources

Nature Safe Natural and Organic Fertilizers  
<http://naturesafe.com>

Sustainable Production Systems Ag Program  
<http://sustainable.tamu.edu>

Appropriate Technology Transfer for  
Rural Areas  
<http://www.attra.org>

Rodale Institute  
<http://fadr.msu.ru/rodale>

Soil Quality Institute  
<http://www.statlab.iastate.edu/survey/SQI>

Alternative Farming Systems  
Information Center  
<http://www.nal.usda.gov/afsic>

International Federation of Organic  
Farming Movements  
<http://www.ifoam.org>

National Organic Program  
<http://www.ams.usda.gov/nop>

Kerr Center for Sustainable Agriculture  
<http://kerrcenter.com>

Texas Department of Agriculture  
<http://www.agr.state.tx.us>

Seeds of Change  
<http://store.yahoo.com/seedschange/index.html>

National Center for Appropriate Technology  
<http://www.ncat.org>