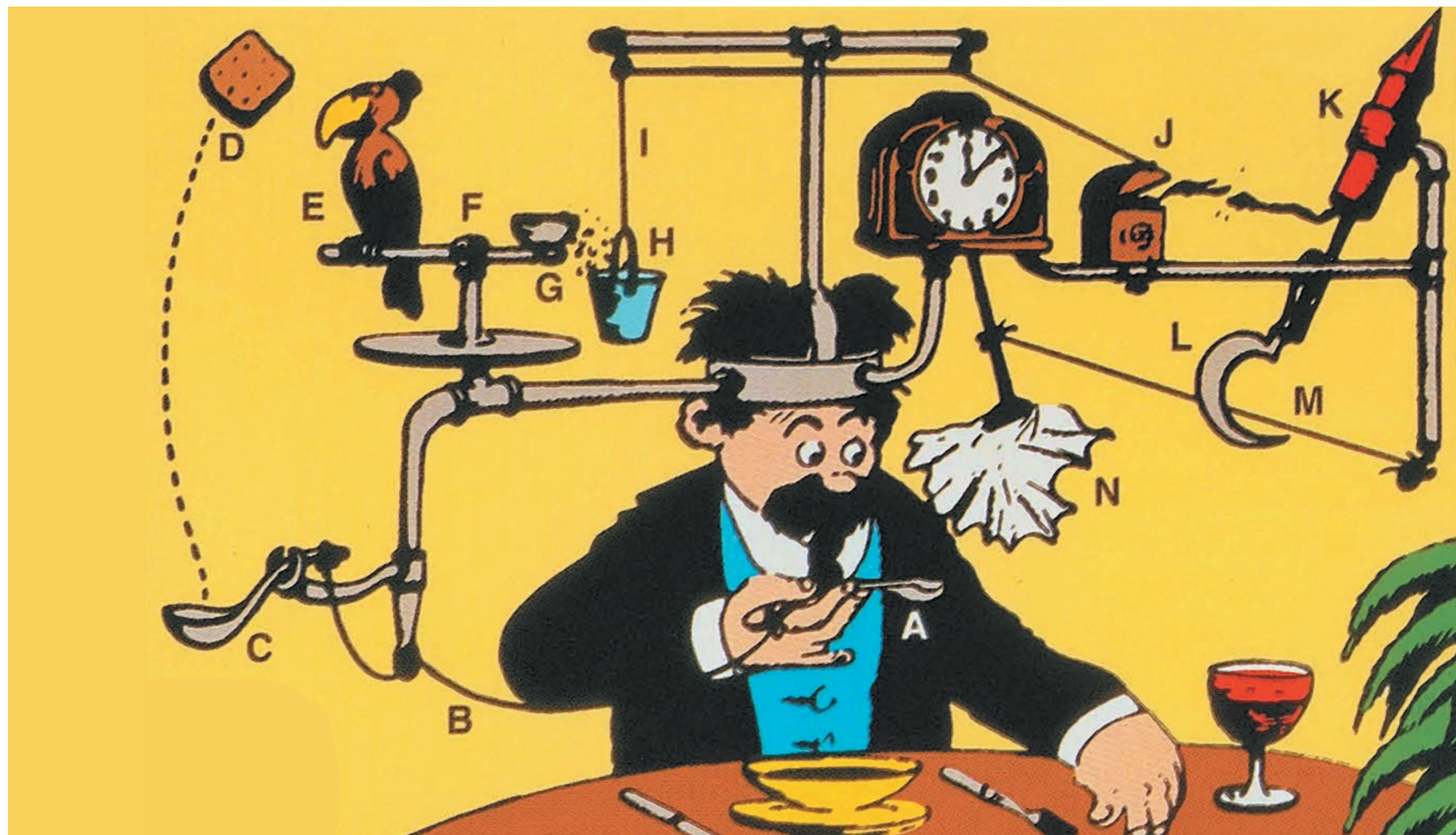


# WHOLE GRAIN



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# "Innovation Distinguishes Between a Leader and a Follower"


BY BRIAN KING

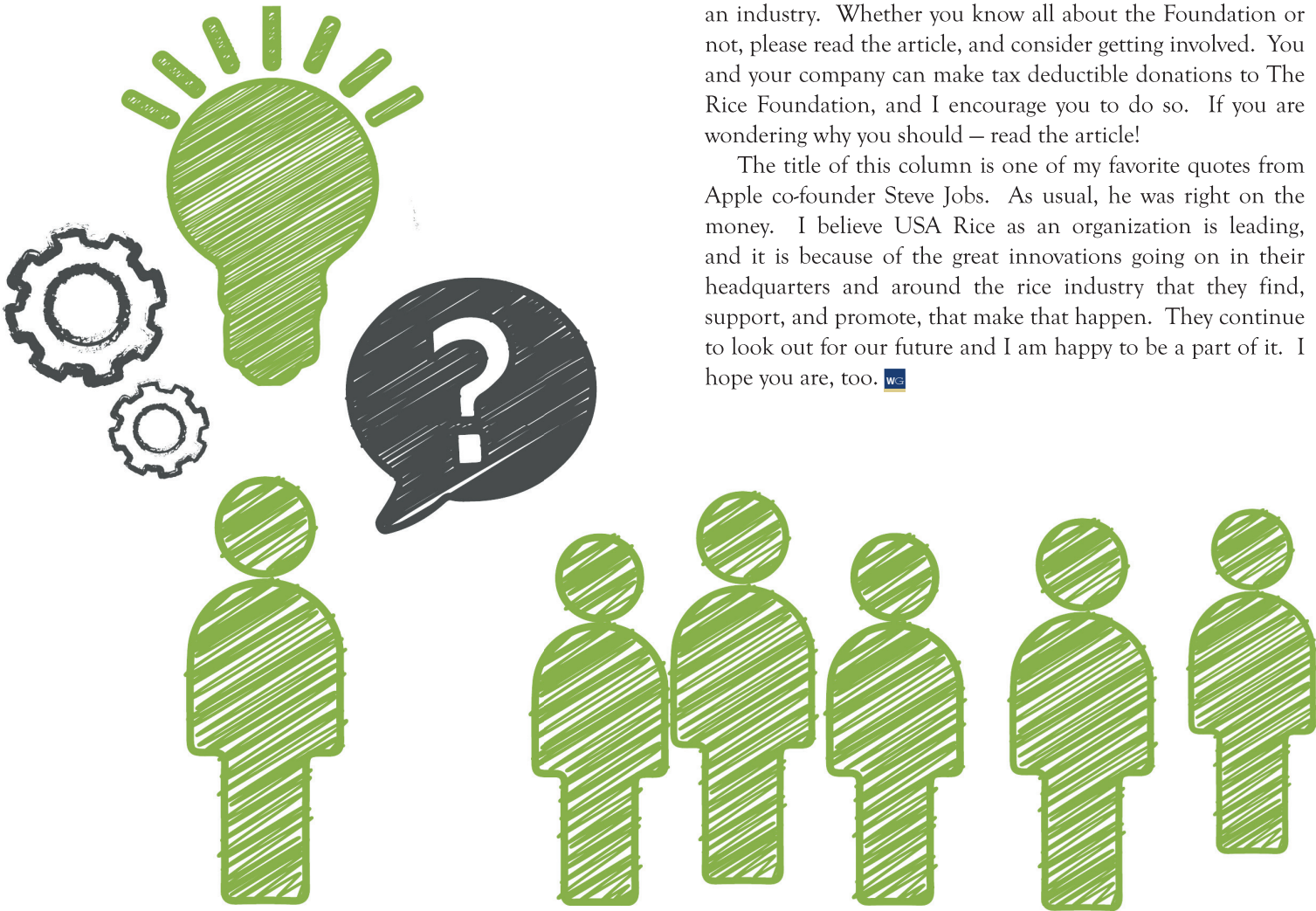
**I'M PLEASED TO PRESENT TO YOU** the Innovation Issue of the *Whole Grain*! In these pages we will both report to you some of the exciting things USA Rice is helping the rice industry achieve, and also highlight some of the great innovations going on that you might not be aware of.

You'll find out about some innovative uses for rice fields in Louisiana – as an eco-tourism destination and using rice and crawfish to improve soil health. You can read about entrepreneurs making saké here in the U.S. with home grown rice, and the innovative way USA Rice is teaching chefs and food writers all about our industry.

Be sure to check out how the National Rice Month Scholarship contest has grown into a burgeoning video contest and all the creative entries USA Rice received this year. You'll also read about innovations in rice fortification that not only helps the less fortunate and food insecure around the world, but also shows that the rice industry is at the cutting edge of food technology.

Along those lines, I want to be sure to call your attention to the article about The Rice Foundation. In addition to administering the Rice Leadership Development Program, of which I am a proud graduate, The Rice Foundation has been funding ground breaking and vital research that plain and simple, is designed to ensure our long-term survival as an industry. Whether you know all about the Foundation or not, please read the article, and consider getting involved. You and your company can make tax deductible donations to The Rice Foundation, and I encourage you to do so. If you are wondering why you should – read the article!

The title of this column is one of my favorite quotes from Apple co-founder Steve Jobs. As usual, he was right on the money. I believe USA Rice as an organization is leading, and it is because of the great innovations going on in their headquarters and around the rice industry that they find, support, and promote, that make that happen. They continue to look out for our future and I am happy to be a part of it. I hope you are, too. 



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USA Rice is the global advocate for all segments of the U.S. rice industry with a mission to promote and protect the interests of producers, millers, merchants, and allied businesses.

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"I believe USA Rice as an organization is leading, and it is because of the great innovations going on in their headquarters and around the rice industry..."

— BRIAN KING, USA RICE CHAIRMAN

# U.S. RICE FINDS A HOME IN LOCALLY MADE SAKÉ

BY JENNIFER L. BLANCK

With the growing demand for premium saké combined with the current taste for craft beverages, the U.S. market is seeing an increase in locally-produced saké.

### SAKÉ RICE

Mistakenly called “rice wine,” saké’s brewing process is similar to beer and uses four ingredients: rice, water, koji, and yeast. Rice varieties most suitable for saké production have a starch structure that is well centered, concentrated, and more easily hydrolyzed, making it easier to mill away much of the protein and fat and offering a more efficient fermentation process.

Jeff James, owner and brewer of Cedar River Brewing Company in Seattle, uses Calrose rice. He purchases the California rice already milled or “polished” to 60 percent by a wholesaler. A medium-grain rice, Calrose has been the predominant rice in U.S. saké production because of availability and price.

Recently, James started experimenting with Yamada Nishiki rice from Arkansas. He purchased the polished rice from Minnesota Rice & Milling (MN Rice) in Minneapolis. MN Rice sells and polishes four different varieties for saké breweries, home brewers, and wholesalers worldwide: Calrose, Koshihikari, Sasanishiki, and Yamada Nishiki.

A short-grain rice, Yamada Nishiki is considered the king of saké rice. It absorbs water faster and easier—in less than half the time and at a more predictable rate—than Calrose. Predictability is critical, given the precise nature of the saké production process. The starch also breaks down into sugar differently in the two varieties, with Yamada Nishiki measuring and tasting sweeter. It is also structurally more round and plump, making it easier to mill. MN Rice owner Blake Richardson likens the difference to milling a baseball compared to straw.

### HOW SAKÉ IS MADE

When making saké, the first step is to polish the rice, exposing its starchy core. The milling rate determines the saké’s category. The more the rice is polished, the higher the classification level and more expensive the resulting saké will be. However, that doesn’t guarantee the quality is always higher.

The rice is washed to remove any impurities, soaked to add moisture, and steamed to bring out the starch. Water can be up to 80 percent of the finished product, so the water source is considered to be just as important as the rice.

Koji, rice with a fungus growing in it, is sprinkled on the rice, changing the starch into sugar. Yeast is used to convert the sugar into alcohol. A “yeast starter” comprising yeast, rice, koji, and water is created and ingredients are added incrementally to the fermentation tank. Once a full batch is reached, it is called the main mash and left to ferment. Then the mash is pressed to separate the saké from the rice solids.

Afterwards, different steps may be completed—such as pasteurizing, filtering, diluting, adding additional spirits or flavors, or aging in cedar—depending on the type of saké produced. It is then stored and bottled. Saké is best enjoyed fresh—within a year. Premium saké is most often served chilled, but it can also be consumed hot or at room temperature, depending on the style and an individual’s preference.


### SAKÉ PRODUCERS

The four major Japanese companies in the United States—Gekkeikan, Ozeki, Takara, and Yaegaki—started by importing saké. In the late 1970s and 80s, they established California-based operations that also brew domestic saké using locally-sourced ingredients. James estimates “the Big 4” produce about 90 percent of the saké in the United States. He describes SakéOne, based in Forest Grove, Oregon, as middle tier in terms of production amounts and the remaining 14 as “little guys,” with more small producers on the way.

As one of the smallest producers, it takes James a year to go through a ton of rice. Texas Saké Company in Austin is one of the larger small-scale producers and goes through 24,000 pounds of Calrose annually. Richardson uses more than 33,000 pounds a year at his saké brewpub Moto-i, comprising 80 percent Yamada Nishiki.

While most use Calrose or Yamada Nishiki, there are some producers brewing different varieties, such as Koshihikari used by Blue Current in Kittery, Maine. Many brewers express a desire to experiment with one of the other 100+ saké rice varieties not currently available, with Omachi on the top of Richardson’s list.

The majority of U.S. saké stays inside the country, but not all. For example, SakéOne and Texas Saké Company export to multiple countries, with Texas Saké even shipping to Japan.

Japan’s saké-making tradition is more than 2,000 years old. In the United States, the tradition is just getting started, and U.S. rice is leading the way. 

Jennifer L. Blanck is a writer with an MSc in wine business and while she loves Barbaresco above all else, she has a newfound appreciation for saké.

Saké, pronounced “sah-kay,” is known as *nihonshu* or *seishu* in Japan. In Japanese, *saké* refers to an alcoholic drink in general.

### U.S. SAKÉ BREWERIES

- ARIZONA SAKÉ, Holbrook, AZ
- BEN’S TUNE UP/BEN’S AMERICAN SAKÉ, Asheville, NC
- BLUE CURRENT, Kittery, ME
- BROOKLYN KURA, New York, NY
- CEDAR RIVER BREWING COMPANY, Seattle, WA
- DOVETAIL SAKÉ, Waltham, MA
- GAIJIN 24886, Denver, CO
- KURACALI SAKÉ & BEER BREWERY, San Marcos, CA
- MOTO-I, Minneapolis, MN
- REBEL SAKÉ, Lake Elsinore, CA
- SAKÉONE, Forest Grove, OR
- SEQUOIA SAKÉ, San Francisco, CA
- SETTING SUN SAKÉ, San Diego, CA
- TEXAS SAKÉ COMPANY, Austin, TX

Cedar River Brewing Company,  
Seattle, WA  
Photo by Katherine Gooding  
Seattle Photographer





# THE MOST INNOVATIVE RICE ORGANIZATION YOU'VE NEVER HEARD OF (PROBABLY)

BY JENNIFER L. BLANCK

There are as many quotes about innovation as there are types of rice grown in the world. But if you read 40,000 pithy quotes about innovation, they would all boil down to the same idea expressed by business consultant and author Jamie Notter: "Innovation is change that unlocks new value." And that is what The Rice Foundation is all about.

The Rice Foundation is a 501c(3) organization that represents all segments of the U.S. rice industry with a mission to further the well-being of its members and ensure the long-term sustainability and future competitiveness of U.S. rice. To achieve this mission, the Foundation identifies issues important to the rice industry, funds research projects to address these issues, and supports leadership and education programs, including the Rice Leadership Development Program. California rice farmer and current Foundation Chair Charley Mathews says, "The Rice Foundation has great flexibility and impact in what it does. The scope is broad, and the sky's the limit."

The Rice Foundation was created as a linkage to industry by Arley Bowling, who served as its first director. Bowling came from the cotton industry and modeled the Foundation after the Cotton Foundation, but on a smaller scale. The Rice Foundation received its tax exempt status in 1986 and began the Rice Leadership Development Program in 1989.

Funding comes from dues, sponsorships, and other sources. Initially, the Foundation was funded by EU Tariff Rated Quota (TRQ) monies, but with those all but gone, it is now mainly supported by industry contributions.

The Foundation's 25-member board comprises a cross section of millers, suppliers, users, and producers, which includes representatives from state research boards. Current Foundation leadership includes Mathews, Vice Chair Frank Carey, from a major crop protection company in Mississippi, and Secretary Robert Trahan, a Louisiana miller. There is a selection committee for the Rice Leadership Development Program and a Budget Committee, as well as a Funding Task Force. Current Executive Director Dr. Steve Linscombe says, "The Foundation's board is entirely voluntary. These individuals put a huge amount of time and dedicated effort to facilitate the success of this organization."

The board spends much of its time focusing on big picture issues facing the U.S. rice industry, and asks the question, "how do we see the rice industry evolving down the road?" Board member Paul Crutchfield says, "The Foundation offers the industry an opportunity to have a group that can step back and take off their respective hats and say, 'Now, for the good of the industry, what is the direction—given what I've learned from other groups in the industry—we should be going?' It performs a function that no one else is performing. And it's essential that it's done."

A key part of the Foundation's mission is supporting research that benefits the entire U.S. rice industry. Currently, projects focus on conservation, sustainability, and nutrition. Chuck Wilson, who retired from the Foundation in September after serving as its executive director for 9 years and working in the rice industry for 40 years, says, "Foundation-supported projects have not had high visibility, but the research is so important. We're trying to make people aware of the value the Foundation brings to the industry."

Carey describes the Foundation's research as "one of the best kept secrets." Here's a look at some of the projects the Foundation has funded over the years.

## Association between Rice Consumption and Selected Indicators of Dietary and Nutritional Status

The U.S. Department of Agriculture's Dietary Guidelines for Americans emphasizes grains, in particular whole grains, as part of a healthy diet. However, specific grains are not mentioned. This study examined rice consumption and nutrient intake, diet quality, and body mass index. Rice consumers, both children and adults, were found to have a significantly higher intake of nutrients, such as iron, B vitamins, vitamins A and D, phosphorous, magnesium, copper, zinc, and folate, compared to non-rice eaters. Rice consumption was also found to result in a smaller waist line and decreased risk of being overweight or obese. The research determined that rice consumption results in significant positive diet, health, and nutrition impacts, and helps ensure rice maintains a place in government feeding programs.

## Colonic Health Improvement Through Rice Bran

According to the American Cancer Society (ACS), colorectal cancer is the third most commonly diagnosed cancer in both men and women. This research evaluated rice bran's potential to reduce colon cancer markers in rats. It also aimed to develop and evaluate different manufacturing processes that increase the health benefits of rice bran. The rice industry has long been aware of the numerous health benefits provided by rice bran, and this study further pinpointed specific benefits in a very important area of human health.

## Effect of Water Management on Rice Grain Yield, Milling Yield, and Grain Arsenic Concentration: A Multi-State Effort

Arsenic is a naturally-occurring element found all around us. It is present in the water we drink, the air we breathe, and the soil where we grow our food. This two year study was conducted in each of the six states where rice is grown to test arsenic levels in rice. The study provided timely proof that inorganic arsenic levels in rice grown in the United States are significantly below the CODEX standards, which are the global food standards supported by the World Health Organization and the Food and Agriculture Organization of the United Nations.

## Enhancement of Breeding for Jasmine-Type Aromatic Rice Varieties for the United States

A significant amount of Jasmine rice is imported from Thailand each year. This specialty rice can only be grown in a specific area in Thailand and is popular due to its aromatic qualities. It is also more expensive than regular rice. This project developed a Jasmine-type rice variety for the U.S. rice industry, with similar aromatic and other specialty properties, which is now on the market and allows the U.S. industry to compete with Thai imports. Researchers also developed a simple and reliable aroma detection method that can handle a large number of small samples efficiently.

## Estimating the Biological and Economic Contributions that Rice Habitats Make in Support of North American Waterfowl Populations

This study examined how rice habitats support North American waterfowl populations. The research determined that without rice habitats, the North American Waterfowl Management Plan's population goals were unlikely to be met. The total cost of replacing all flooded rice habitats in the United States would approach \$3.5 billion, which doesn't include annual operation and management costs ranging from a \$73,000,000 to \$128,000,000. This research quantified and reinforced the overall value of flooded rice habitats in support of North American waterfowl populations. This led to the creation of the USA Rice-Ducks Unlimited Stewardship Partnership that in turn has netted tens of millions of dollars for U.S. rice farmers to continue their upkeep of critical wildlife habitat through the USDA's Regional Conservation Partnership Program.

### Evaluation of New Technologies for Red Rice Control

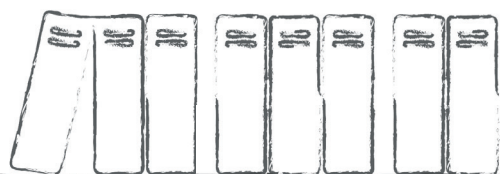
Red rice is a destructive weed that costs rice producers millions of dollars annually. In fact, in many U.S. rice producing areas, red rice has historically been one of the biggest constraints to profitable rice production. Since rice and red rice belong to the same species, it has been virtually impossible to develop a conventional herbicide without harming the commercial crop. This project studied the Clearfield/Newpath and Liberty Link systems for controlling red rice and other rice weeds and provided a better understanding of the systems and their limitations. The Clearfield/Newpath system has been one of the most significant breakthroughs in southern U.S. rice production history, and this research was key to the development of the sequential-post emergence method, now accepted as the system's best approach for weed control. The impact on industry profitability has been enormous.

### Investigation of Rice Starch Molecular Structure to Slow Starch Digestion Rate and Lower Glycemic Response

This project examined current U.S. rice varieties to identify any that provide a low glycemic index (GI) and understand if rice can be altered to moderate the rate of starch digestion and achieve a lower rice GI. This could lead to health benefits for consumers as low GI and slowly digestible food moderate blood glucose levels, important benefits for diabetics and pre-diabetics, and can help with cardiovascular disease and obesity. A slower glucose release is also associated with sustained energy levels, increased mental acuteness, and feeling full and satisfied longer. Researchers found a molecular basis for slowly digestible starch and low GI properties in U.S. rice varieties that can be used in the development of a breeding strategy to produce these rice types. Rice varieties with these characteristics could provide significant dietary benefits for U.S. rice consumers who eat them, as well as positive impacts to the U.S. rice producers who grow them, and further adds to rice's "health halo" with dietary experts.

### New Knowledge and Improved Methods to Increase Breeders' Ability to Develop Rice Varieties with Enhanced Fissure Resistance

Rice kernels can develop cracks due to weather issues. These cracks are inside the hull and cannot be seen. During milling, these weakened kernels often break. Broken kernels have  $\frac{1}{2}$  to  $\frac{3}{4}$  the market value of whole kernels, resulting in profit losses for millers and producers. Traditional methods for evaluating field fissure resistance involve monitoring samples over multiple, sequential harvests. This study developed a new laboratory test for fissure resistance in the first breeding generation with only 50 rice kernels. As a result, breeders will be able to develop new and improved fissure resistant rice varieties faster and more successfully, directly improving the bottom line for producers and mills and adding value for consumers.



### North American Waterbirds

Many researchers have examined rice management practices and the ecology of wildlife in rice fields separately. This interdisciplinary study investigated the integration of the two components, which is a relatively new research area. The goal was to develop an interdisciplinary approach in evaluating factors that limit rice production and waterbird sustainability in California, particularly in relation to alternative rice management (ARM) practices. The study determined that waterfowl can help reduce red rice and other weeds and increase straw decomposition in flooded, fallow rice fields. It also found that, at certain densities, waterfowl may minimize autumn tillage requirements. As a result, researchers recommend rice producers consider practices that attract waterfowl, offering a new sustainable technique for growers, while enhancing wildlife habitats and the industry's "conservation halo."

### The Role of Rice Agriculture in the Winter Ecology of Northern Pintails

Northern pintails, formerly among the most abundant ducks in North America, have declined in numbers significantly since the 1950s due to drought and loss of habitat in the Prairie Pothole Region. This study found that the quality of food obtained from freshwater habitats throughout the Central Coast of Texas—primarily rice fields—is considerably better than food in coastal habitats and provides wintering pintails with ample energy reserves for spring migration. Those in saline, coastal habitats did not. Based on this and prior research, the study concluded that management strategies that provide or protect natural shallow freshwater habitats and current and fallow rice fields would benefit northern pintails, reinforcing rice's exceptionally important role in providing waterfowl habitats.


### Satiety Response of White and Brown Rice Compared to Glucose Control

This research compared satiety—or a sense of satisfaction and fullness—in white rice, brown rice, and glucose beverage, a standard substance used for comparison in weight management and satiety studies. The research found no difference between brown and white rice. However, both were found to provide more satisfaction and sense of fullness compared to the glucose beverage, providing more proof that rice is an important part of a healthy diet.

### Simpler Less Expensive Method of Analysis of Inorganic As (iAs) in Rice

Prior to this study, determining arsenic (As) content in harvested rice samples was extremely expensive and time consuming. This study developed a reliable, simple, timely, and less expensive method for the analysis of inorganic As (iAs) in rice grain, providing significant savings to the rice industry, and enabling the industry to demonstrate responsiveness to end users' concerns.

### Soil Based Nitrogen Test for Fertilizer Management in Rice

Fertilizer-based nitrogen is one of the most important ingredients for optimizing rice yield and quality. This project studied native soil nitrogen release in rice production and developed a method for determining soil's potential for nitrogen mineralization. The new test allows for site-specific nitrogen fertilizer rate recommendations, which lowers any potential impact to the surrounding environment. It also facilitates maximum agronomic and economical rice yield with minimal disease. The research provided information to help rice producers more efficiently and effectively apply nitrogen to their crops, again improving the bottom line for growers. 

*Jennifer L. Blanck is a freelance writer who, after this assignment, plans to eat more rice.*

### Would you like to support The Rice Foundation?

You and your company can make tax deductible donations to support the Foundation's important work.  
**Go to [www.usarice.com/foundation](http://www.usarice.com/foundation) for more information.**