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Rice Today

International Rice Research Institute

April-June 2013, Vol. 12, No. 2

The birds of IRRI

Giving women a voice

Rice diplomacy in South Asia

Uganda: blazing a trail of success

Politics and monsoon affect the rice market

ISSN 1655-5422

Rice Science for
Food Security through
Smallholder and
Agri-business Development
in Africa

3rd Africa Rice Congress 2013

21-24 October 2013

Yaoundé, Cameroon

www.AfricaRice.org/ARC2013

Organized by AfricaRice
in collaboration with the Government of Cameroon

AfricaRice

contents

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Eurasian tree sparrow

©TIRSO PARIS (3)

Black-winged stilt

Chestnut munia

Intermediate egret

About the covers. For this issue, we could not come up with just one cover shot since there were so many wonderful choices. So, for the first time, *Rice Today* features four covers for a single issue to lead into our coverage of the Birds of IRRI, beginning on page 20, which also displays our first-ever foldout centerfold.

Rice Today is published by the International Rice Research Institute (IRRI) on behalf of the Global Rice Science Partnership (GRiSP).

IRRI is the world's leading international rice research and training center. Based in the Philippines and with offices located in major rice-growing countries, IRRI is an autonomous, nonprofit institution focused on improving the well-being of present and future generations of rice farmers and consumers, particularly those with low incomes, while preserving natural resources. It is one of the 15 nonprofit international research centers that are members of the CGIAR consortium (www.cgiar.org).

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The opinions expressed by columnists in *Rice Today* do not necessarily reflect the views of IRRI or GRiSP.

International Rice Research Institute
DAPO Box 7777, Metro Manila, Philippines
Web: www.irri.org/ricetoday

Rice Today editorial
telephone: (+63-2) 580-5600 or (+63-2) 844-3351 to 53, ext 2725;
fax: (+63-2) 580-5699 or (+63-2) 845-0606; email: l.reyes@irri.org, info_ricetoday@irri.org

More to rice than meets the eye

This issue of *Rice Today* is for the birds! For the first time, the magazine sports four different covers, each featuring some of the bird species found in and around the International Rice Research Institute (IRRI) headquarters in the Philippines. (We feature even more of our feathered friends in the magazine's special foldout centerfold.) It's all part of *Feathers in the fields: The birds of IRRI*, a photo exhibit that will run from May through September (see *A human-eye view of birds*).

So, what do birds have to do with growing rice? Birds may have nothing to do with varietal development, but their presence is a clear indication of how rice is being grown at IRRI. Since the 1990s, its integrated pest management program has helped dramatically reduce the Institute's use of pesticides by 96%, resulting in a healthier rice ecosystem in its experimental fields. Actually, birds have something to do with growing rice. Some do help farmers control pests (see *Don't scare away the birds!*)—proof that agriculture and nature can co-exist in a mutually beneficial manner.

Speaking of peaceful co-existence, IRRI conducts collaborative work and finds ways to share rice germplasm efficiently among partner countries. But, there is more to it than meets the eye. By serendipity, its rice science is building a diplomatic bridge across the political borders of Bangladesh and India (see *Rice diplomacy in South Asia*).

Success stories are also happening in Africa. Read how Uganda managed to decrease its imports and improve its food security (see *Uganda: blazing a trail to rice success*). Ghana, on the other hand, shows the importance of growing rice through its First National Rice Festival (see *Ghana celebrates rice*).

A Chinese proverb says women hold up half of the sky. They also play a major role in agriculture, particularly in South Asia. *Rice Today* celebrates and acknowledges the contribution of women farmers who play a critical role in improving rice production and global food security (see *Women in motion*). We also have a feature on Kamala Gurung, a young gender specialist, who makes it her mission to promote gender equality and empower women farmers in South Asia (see *Giving women a voice*).

Dr. David Dawe, an FAO senior economist, provides an analysis on how a global rice crisis, such as that of 2007-08, could affect domestic markets (see *A shock wave from global cereal price spikes*?). Dr. Samarendu Mohanty, IRRI senior economist, on the other hand, analyzes the political context and how monsoons can affect the rice market in Asia (see *Rice facts*).

This issue's map, *The when and where of rice,* shares a global perspective on when rice is planted and harvested, and where production occurs. This information is important to better assess food security, and seasonal and geographic locations of the rice supply.

And, to better serve rice farmers and consumers, and to be more efficient with resources, IRRI is overhauling its rice breeding agenda to make it more demand driven. Read how IRRI plans to undertake this change (see *The pipeline grows stronger*).

On the cultural aspects of rice, check out a lighthearted Japanese fable and discover a monk's secret in *The monk who ate no rice.*

Finally, various industries have transformed rice husk from an unwanted farm waste into a recycled natural resource. This rice by-product is being used to provide electricity to small and remote villages in India and is ending up back on the dining table as the material used to make wood-free chopsticks—consequently saving trees (see *A second life for rice husk*).

Enjoy!

Lanie C. Reyes
Rice Today managing editor

Average rice yield in sub-Saharan Africa jumps 30%


R. RAMAN, AFRICARICE

LOCAL RICE market in Mopti, Mali.

The average rice yield in sub-Saharan Africa (SSA) expanded by about 30% from 2007 to 2012, and it is increasing faster than the global average according to an analysis by the Africa Rice Center (AfricaRice).

From 1961 to 2007, the average rice yield in SSA increased by about 11 kg per hectare per year. And, it rose by a spectacular average of 108 kg per hectare per year from 2007 to 2012, despite drought and floods in several African countries in 2011 and 2012.

AfricaRice revealed that the paddy rice production growth rate in SSA shot up from 3.2% per year from 2000 to 2007 to 8.4% per year from 2007 to 2012.

"This is very encouraging news," said AfricaRice Director General Papa Seck. "The surge in SSA's rice production and yield is a result of key investments made by farmers, governments, the private sector, the research community, and donors to develop Africa's rice sector."

Dr. Seck underlined that it is crucial to maintain this trend, because rice consumption in SSA continues to increase at 5% annually.

AfricaRice Deputy Director General Marco Wopereis explained that such growth rates are comparable with cereal yield growth rates after World War II in the United Kingdom and the U.S.

"Currently, 71% of the increase in paddy rice production in SSA can be explained by yield increases and 29% by area expansion, whereas, before the rice crisis, only 24% of the production increase could be attributed to increases in yield and 76% to increases in harvested area," Dr. Wopereis said.

"This is evidence of increased use of technological innovation, such as improved varieties and improved crop management in general," he added.

Rice yield worldwide—driven by the Green Revolution in Asia—increased by 52 kg per ha per year from 1960 to 2010.

Source: http://africarice.wordpress.com

Nigeria: Rich farmers more likely to adopt improved rice varieties

Household wealth strongly affects farmers' decisions on whether to use improved rice varieties (IRVs), according to a study of rice farmers in Nigeria.

"Wealthier households are more likely to adopt IRVs than their poorer counterparts," said Aliou Diagne, AfricaRice economist. "The richest rice farmers have better access to resources and may be more able to take risks. Similarly, expensive technologies are available only to—and thus adopted by—the richest farmers."

The adoption of IRVs has had a significant positive impact on household income and on Nigerian rice production, Dr. Diagne said.

But, he added that boosting the adoption of IRVs by farmers, regardless of wealth, will require improving their awareness of IRV benefits; disseminating IRVs more widely; investing in farmer education programs; facilitating farmer access to credit, seeds, and farmer organizations; and offering them better supervision by extension agents.

Source: www.scidev.net

Farm mechanization, a must in India

Farm mechanization is needed in India due to the shortage of farm laborers and declining interest of young people in agriculture, according to J.K. Ladha, principal scientist and International Rice Research Institute (IRRI) representative in India.

"The agricultural sector in India is facing an acute shortage of laborers, and mechanization of farming practices can definitely help overcome the crisis," Dr. Ladha stated. "Farmers, by adopting cheap and innovative technologies, can enhance the productivity of rice and other crops easily."

MAHESH GATHALA, CSISA

EQUIPMENT SUCH as this laser leveler can help increase productivity in India.

The agricultural sector in India is facing an acute shortage of laborers, and mechanization of farming practices can definitely help overcome the crisis

He also said that equipment such as laser levelers (photo) for leveling land, rice transplanters, drills for direct seeding of rice, and combine harvesters can help increase productivity and increase profitability. He said IRRI has also been trying to generate interest among young people to take up farming.

"Like agricultural laborers, there is also a shortage of agricultural scientists in the country," explained Dr. Ladha. "We have therefore started many new exchange and training programs to attract youth to do research in agriculture." Moreover, IRRI scientists and agricultural engineers are working on light and low-cost power tools and machinery that will help improve field operations.

Source: http://articles.timesofindia.indiatimes.com

Basmati gains popularity in Saudi Arabia

Rice is a staple in Saudi Arabia, with an annual per capita consumption of around 42 kilograms. But, the country relies completely on rice imports of 1.14 million tons per year to meet its domestic need.

While U.S. long-grain rice is well known in Saudi Arabia, consumers' preference has shifted to basmati varieties in recent years, with Indian rice exports benefiting the most, according to the USDA. In 2012-13, Saudi Arabia is expected to import around 1.2 million tons. And, in 2013-14, its imports are estimated to increase by 3%.

Source: http://oryza.com

Rice research in spotlight as Philippine President visits IRRI


CHRIS QUINTANA

Philippine President Benigno S. Aquino III visited the International Rice Research Institute (IRRI) on 14 February 2013 to celebrate the National Year of Rice and to get a personal update on progress of the agreement between IRRI and the Philippine Department of Agriculture (DA). The agreement aims to support the delivery of research and extension services of the Food Staples Sufficiency Program.

"With the support of the President and Agriculture Secretary Proceso Alcala, the Philippine government is providing IRRI with unprecedented financial support to ensure research and development outcomes help rice farmers," said Dr. Achim Dobermann, IRRI deputy director general for research.

Dr. Dobermann also reported that 101 IRRI-bred varieties have been released in the Philippines. These varieties are suited to irrigated, rainfed, upland, low-temperature, and saline environments.

"A recent impact assessment study showed that Filipino farmers have gained an additional Php2,300 (US$52) per hectare from using improved IRRI-bred rice varieties," he added.

The President also toured the International Rice Genebank that conserves more than 117,000 different types of rice, including nearly 10,000 from the Philippines.

GRiSP to host young scientists in Asia forum

The second gathering of the IRRI young scientists will be held along with the Global Rice Science Partnership (GRiSP) Asia Forum on 14-18 October 2013 at the International Rice Research Institute (IRRI) headquarters in the Philippines.

This year, GRiSP will feature a forum for young scientists to interact and share scientific insights with top scientists from around the world on topics related to GRiSP's research themes. It will be a good opportunity for young scientists to become familiar with ongoing research in various institutes across Asia under GRiSP.

The event is being organized by the Association of Fellows, Scholars, Trainees, and Residents of IRRI and GRiSP.

China: Green Super Rice project launches second phase

The Green Super Rice (GSR) project formally launched its second phase in a meeting on 12-14 March 2013 in Hainan, China.

Dr. David Bergvinson of the Bill & Melinda Gates Foundation cited the project's expanding partnerships and stated the main goal of the meeting, which was to develop a sound seed road map for each country covered. This project aims to benefit 500,000 resource-poor farmers from China, other parts of Asia, and Africa.

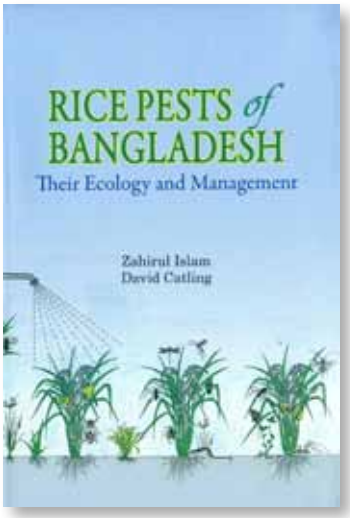
The meeting brought together project stakeholders (photo) onto a common platform to draft a comprehensive work plan for Phase II that will realign resources, determine approaches for capacity building, and lay out strategic seed road maps for Asia and Africa.

CAAS

Rice Pests of Bangladesh: Their Ecology and Management

By Zahirul Islam and David Catling

Published by The University Press Limited, Dhaka, Bangladesh. 420 pages.



This book is a modern, ecological approach to the management of pests that attack rice in Bangladesh that embodies the principles of integrated pest management (IPM).

It brings a refreshing approach to the management of rice pests. It is user-friendly, carefully laid out, easy to read, and profusely illustrated to show the various life stages of the main pests. It is a single source for all rice pests: insects, vertebrates, diseases, and weeds; it encompasses the findings of considerable research efforts over the last 3–4 decades. It gives a fresh look at yield losses caused by insects and diseases, and critically analyzes ways and means of implementing IPM programs.

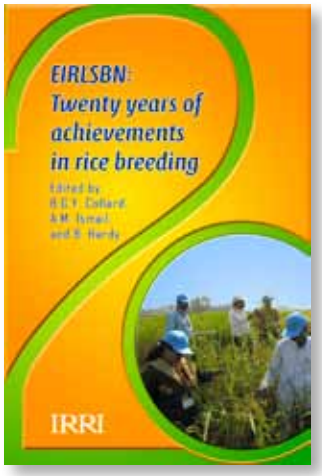
The authors have a thorough knowledge of the pest situation after working on and investigating rice and pest management for more than 30 years in Bangladesh, eastern India, and Southeast Asia. Although written primarily for Bangladesh, the book is also relevant to the neighboring states of West Bengal, Assam, and Odisha in India. It is, in fact, a must for students, teachers, researchers, extension officers, and agricultural development workers in the region. ■

For more information on how to order the book, visit www.uplbooks.com.bd/book/rice-pests-bangladesh-their-ecology-and-management

EIRLSBN: Twenty years of achievements in rice breeding

Edited by B.C.Y. Collard, A.M. Ismail, and B. Hardy

Published by the International Rice Research Institute. 144 pages.



This book provides a comprehensive overview and historical perspectives on the Eastern India Rainfed Lowland Shuttle Breeding Network (EIRLSBN). It richly describes how the Network contributed to overcoming the problems in eastern India's rice production.

Eastern India is an area with a largely agrarian society and high poverty incidence. Rice is the dominant crop, but yields are low. Most of the rice is grown under rainfed conditions in which rainfall is highly unpredictable. A combination of abiotic and biotic stresses occurs in these areas during all growing seasons. Moreover, farmers have limited access to inputs such as fertilizer and good-quality seed. These are the challenges that the region has to overcome to increase its rice production if India and other Asian countries are to achieve food security.

This book tells the story of how the network made considerable progress in developing new rice varieties. At least 20 of these varieties have been released under EIRLSBN. It has been an exemplary model for synergistic rice breeding partnerships. It demonstrates the benefits of regional and international scientific collaboration for working to overcome food insecurity.

In operation (in various forms) for more than 20 years, EIRLSBN has been a "quiet achiever." Thus, this book is an important documentation of the history and accomplishments of this successful breeding network. This will be a good source of information and lessons for the next generation of breeders and rice scientists for them to know how the network has progressed within the context of a rapidly rising population in India, decreasing land availability for rice production, and expected adverse effects from climate change. ■

To purchase printed copies of this book and other IRRI titles, contact riceworldbookstore@irri.org.

TRAINING COURSES AT IRRI

Course title	Date	Venue	Target participants
Rice: Research to Production	20 May-7 June	IRRI, Philippines	Young scientists (21–35 years old)
Phenotyping for Abiotic Stresses	24 June-10 July	IRRI, Philippines	Scientists and researchers
Season-long Rice Farming Training	17 June-18 October	PhilRice and IRRI, Philippines	African extension agronomists
Basics of Rice Production Course: The Rice Camp	24-25 June	IRRI, Philippines	Singaporean teaching personnel
Rice Production Techniques for African Technicians	12-30 August	IRRI, Philippines	African technicians
Advanced Indica Rice Transformation Course	2-7 September	IRRI, Philippines	Tissue culturists, breeders, physiologists, and agronomists
Molecular Breeding Course	2-13 September	IRRI, Philippines	Young scientists working on molecular breeding
Rice Production Techniques for Young Researchers	16 September-4 October	IRRI, Philippines	African junior researchers
Basic Scientific Writing Workshop	14-18 October	IRRI, Philippines	Scientists and researchers
Rice: Postproduction to Market Training Course	14-25 October	IRRI, Philippines	Postproduction specialists

For inquiries, contact IRRITraining@irri.org, m.maghuyop@irri.org, or a.aquino@irri.org. Phone: (63-2) 580-5600 ext 2538 or +639178639317; fax: (63-2) 580-5699, 891-1292, or 845-0606; mailing address: The IRRI Training Center, DAPO Box 7777, Metro Manila, Philippines (Attention: TC Course Coordinator); Web site: www.training.irri.org.
Note: Fees and schedules are subject to change without prior notice.

RiceToday around the world

1. A BREAK from the daily grind. Dr. Elizabeth Humphreys, IRRI's water management specialist, makes the most of her downtime by reading *Rice Today* as farmers in a village in Bangladesh look on with keen interest.
2. COOKING UP a storm. Chef Yogesh Agora, a highly regarded chef on the Asian gourmet scene famous for his tasty dishes and holistic cuisines, and Flaminia Lilli, the partnership development manager at IRRI Fund Singapore, spice up the Master Chef workshops with a double serving of *Rice Today* magazines.
3. RICE IN the Windy City. Bill Hardy, IRRI's venerable copy editor who retires in June after more than 15 years at the Institute, shows off *Rice Today* magazine in Chicago, one of his favorite cities in the world.
4. OF FRIENDS, old and new. Progressive Indian farmer Sardar Jagjit Singh Hara (*center in red turban*) from Ludhiana and a party of fellow farmers from the Punjab made a surprise visit to IRRI on 23 January 2013. The visit reunited Mr. Hara with CPS Head Gene Hettel (*to his right*), who interviewed him on his farm in November 2008 (see *In the Punjab—an outstanding farmer revisited*, Vol. 8, No. 2, pages 34-35 of *Rice Today*). Mr. Hara and his party were particularly interested in IRRI's latest high-yielding varieties, especially those with flood and drought tolerance.

What's cooking?

by **Sunita Jena** and **Indira Jena**

Masala dosa is a traditional southern Indian dish that has become popular all over India. The batter for this recipe has rice and black gram beans, making it rich in carbohydrates and protein. Since it is prepared with minimal oil, this makes it an even healthier dish. It can be savored as part of any meal of the day or as a quick snack. Masala dosa is rich in flavor and is especially enjoyed when served with coconut chutney or *sambar*, a popular vegetable stew, in southern India. Its broth is basically made with tamarind and pigeon peas.

ISAGANI SERRANO (5)

Masala dosa

Dosa batter

Ingredients

1 1/2 cups rice
1/2 cup skinless black gram beans
1/2 teaspoon fenugreek seeds (optional)
Salt to taste

Directions

1. Soak in separate containers the rice, black gram beans, and fenugreek seeds overnight.
2. Pour out some of the water from the soaked rice and grind the rest into a thick paste. Set aside.
3. Grind the soaked black gram beans and fenugreek seeds together.
4. Add the rice paste to the mixture of black gram beans and fenugreek seeds. Add some salt. Mix these ingredients together.
5. Let this mixed batter ferment for 6–7 hours.
6. Then add salt after fermentation.

Masala chutney

Ingredients

1/2 teaspoon ginger
4–5 cloves garlic
4 red chilies soaked in warm water for 4 hours
1 teaspoon cumin powder
1/4 cup roasted Bengal gram (or roasted peanuts) soaked for 4 hours to make soft
1 tablespoon tomato ketchup (optional)
2 tablespoons lime juice
Salt to taste

Directions

1. Grind ginger, garlic, dry red chili, and a little bit of tomato ketchup.
2. Make this a medium-thick paste by adding water little by little.
3. Put in the lime juice and add salt to taste.
4. Then add some water and grind all this into a paste.

Potato stuffing

Ingredients

400 grams (or 2 big) half-mashed potatoes (boiled and peeled)
1 medium-sized chopped onion
1/2 cup peas
2 tablespoons oil
1 teaspoon mustard seeds
1/2 teaspoon skinless black gram beans
1/2 teaspoon Bengal gram
1 1/2 teaspoons grated ginger
2 to 3 green chilies
1 dry red chili
2 stems of curry leaves
1/4 teaspoon turmeric powder
1/4 teaspoon red chili powder
1/4 teaspoon dry mango powder (or lime juice)
2 stems of coriander leaves, chopped
Salt to taste (3/4 teaspoon)

Directions

1. Heat the oil in a pan and put in the mustard seeds.
2. When the seeds crackle, add the black gram beans and Bengal gram, and sauté on medium heat for about 30 seconds.
3. Add the green chilies, dry red chili, curry leaves, and chopped onion. Then sauté on medium heat for about 3 minutes and stir occasionally.
4. Mix in the half-mashed potatoes, peas, turmeric powder, and dry mango powder (or lemon juice), and salt to taste.
5. Cook on medium heat for about 2 minutes while stirring from time to time.
6. Add the chopped coriander leaves, and cook on medium heat for about 1 minute.
7. Set aside to cool.

Directions for preparing the dosa

1. Once the batter has been fermented, check its consistency—if too thick, add some water (make sure the batter is not too thick or too thin).
2. Heat a nonstick pan and sprinkle a little water on it (this should make it sizzle immediately).
3. Then wipe the pan with a cold, damp cloth (to make the batter spread better later).
5. Before the pan gets hot again, quickly pour 1 ladlefull of batter into the pan and spread it in a circular motion with the ladle to make a thin dosa.
6. Heat the pan a bit more to make the dosa crispier.
7. Smear 1 teaspoon of oil on the edges of the dosa.
8. Spread the masala chutney evenly over the dosa.
9. Then put some of the potato stuffing on the dosa.
10. Cook till the dosa turns golden brown.
11. Fold it over and press it lightly using a spatula to make a flat roll.
12. Repeat these steps to finish off the rest of the batter to make more masala-filled dosas.
13. Serve with coconut chutney or sambar.

Sunita Jena, while still far behind in her mother's cooking skills, is slowly starting to learn and appreciate the art of cooking before she gets busy with medical school in the U.S. next year.

Just like Sunita, Mrs. Indira Jena learned most of her cooking skills from her mother too. Moreover, Mrs. Jena satisfies her curiosity about dishes of other cultures by watching cooking documentaries on TV and on the Internet whenever she can. She loves to cook Indian dishes for her children and husband, Dr. K.K. Jena, IRRI plant breeder.

Through this recipe, both Sunita and Indira hope to inspire curiosity in others about Indian dishes.

Watch Sunita and Indira Jena demonstrate how to prepare this delicious Indian dish in a 10-minute video on YouTube at http://snipurl.com/masaladosa.

A second life for rice husk

by **Alaric Francis Santiaguel**

Rice husk, a waste by-product of farming, has become a gold mine of new products

The rice husk (or hull) is the outermost layer of the paddy grain that is separated from the rice grains during the milling process. Around 20% of paddy weight is husk and rice production in Asia produces about 770 million tons of husk annually.

Rice husk was largely considered a waste product that was often burned or dumped on landfills, according to Martin Gummert, postharvest expert at the International Rice Research Institute.

"In Vietnam, it used to be a waste some years ago and was dumped in the rivers, causing a big problem, but now it has a value," Mr. Gummert said. "In fact, in most countries, rice husk is not waste anymore." Some enterprising companies are turning it into various products not only for the eco-conscious market place but also for the industrial sector.

In India, a nongovernment organization uses rice husk to supply rural villages with cheap and affordable electricity, while a company in Spain saves the environment one chopstick at a time.

Recycled light

India, one of the biggest rice producers in the world, not surprisingly, also produces vast amounts of rice husk. Bihar alone is estimated to produce 1.8 billion kilograms of rice husk every year. For Gyanesh Pandey, an engineer and native of the state, this was an inexpensive energy source to light up villages outside India's industrial power grid.

Mr. Pandey is the co-founder and CEO of Husk Power Systems (HPS),[1] a rural empowerment enterprise that designs, installs, and operates mini power plants using a biomass gasification technology he co-developed. The process burns rice husk with a controlled amount of oxygen to produce gas that powers an internal combustion engine that produces electricity. The mini power plants, operated by local villagers trained by HPS, can generate from 25 kW to 100 kW of electricity. Rice husk power plants, depending on their

IRRI

ONCE AN unwanted waste material, rice husk is now used as fuel for generating electricity for households and industries as well as a replacement for wood in many products.

[1] www.huskpowersystems.com

size, can light up villages and hamlets of up to 4,000 people.

The electricity is distributed directly to subscribing households, farms, and small businesses, within a radius of 1.5 kilometers, on a pay-for-use basis. Consumers prepay a fixed monthly fee, ranging from US$2 to $3, to light two fluorescent lamps and one mobile charging station, according to HPS. This is at least 30% cheaper than the cost of kerosene and diesel and enables savings of up to $50 for each household every year.

Since 2008, HPS has installed more than 80 plants in Bihar—enough to provide over 200,000 people across 300 villages and hamlets with electricity. By 2014, HPS plans to take its decentralized electricity generation and distribution model to more than 6,500 rural areas. HPS estimates that more than 10 million people will benefit from the power of recycled rice husk.

Back on the table

Another company is bringing rice husk back to the dining table, not as food but as the main material for producing disposable chopsticks.

The use of wooden disposable chopsticks—which are cheap, convenient, and hygienic—has a tremendous effect on the environment. In China alone, an estimated 45 billion pairs are used and thrown away every year, the equivalent of almost 4 million fully grown trees, according to a report by *China Daily*. The environmental impact of wooden disposable chopsticks is so serious that the Chinese government has imposed a "chopstick tax" to curb production and use.

Japan is another major consumer of disposable chopsticks. Eliminating disposable chopsticks in the country could prove more difficult because of traditional beliefs that "chopsticks lose their original divine power after a single use."[2] To preserve its forests, Japan imports disposable chopsticks from China, Vietnam, Indonesia, Chile, and Russia, resulting in deforestation in those countries. Japan, however, still has to deal with the problem of used chopsticks—an estimated 25 billion pairs every year. This is where rice husk comes in.

Algan Technology,[3] a company that specializes in reusing waste products and by-products, has developed a new material that contains 90% rice husk and only 10% resin. This nontoxic material, called SOLIT RICEIT, can be used for manufacturing reusable and disposable chopsticks without cutting down a single tree.

"SOLIT RICEIT chopsticks have the feel and appearance of regular chopsticks so they can be used over and over again as eating implements," said Joaquín Rodrigo García, co-founder and project manager of Algan Technology. SOLIT RICEIT chopsticks are so eco-friendly they can also be recycled into new products such as boxes, boards, pallets, and others traditionally made from wood without using any additives or water.

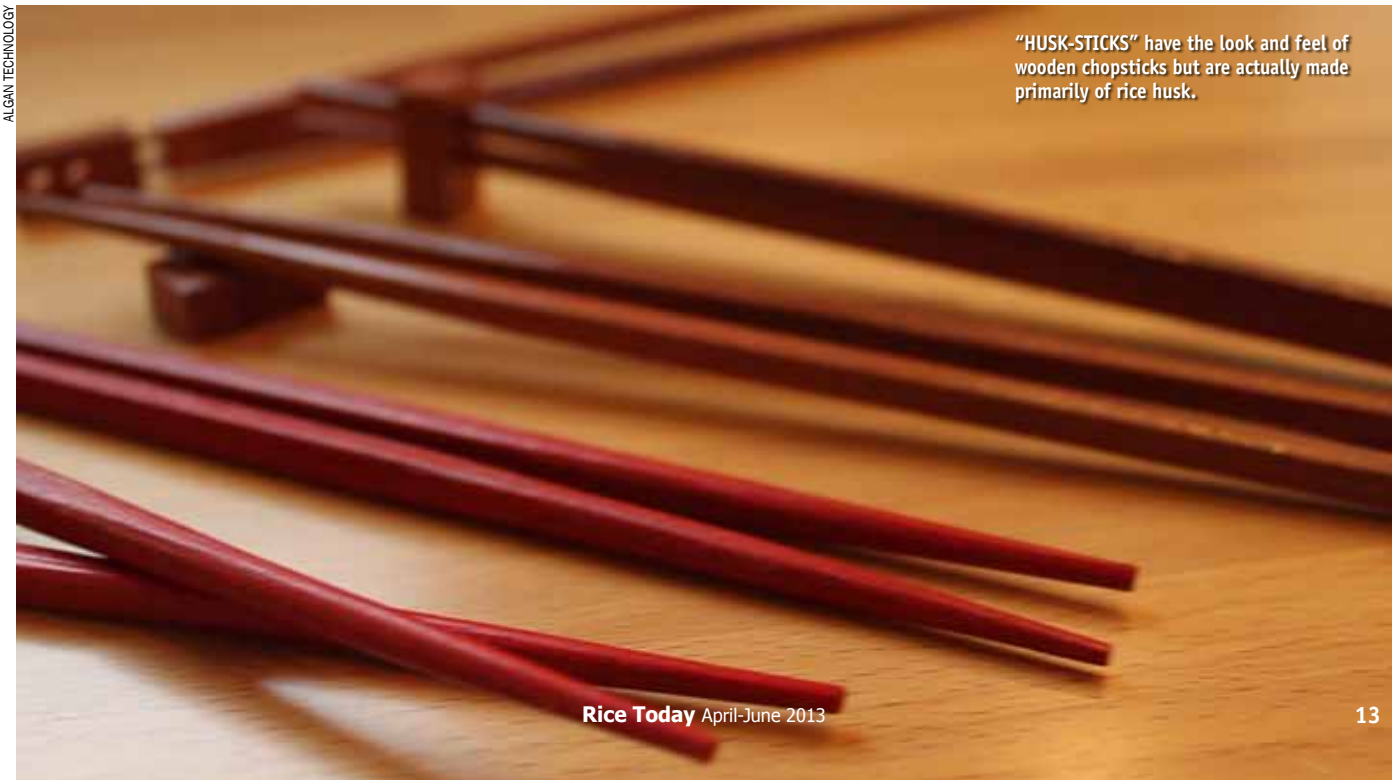
"The daily use of disposable chopsticks means 200 hectares of trees, mainly birch and aspen, have to be cut every 24 hours around the world," said Mr. García. If Algan Technology has its way, chopsticks will no longer "grow" on trees but come from by-products of rice growing.

Mr. Santiaguel is a writer at IRRI.

[2] Edahiro J, Futakuchi K. 2006. Giving Disposable Chopsticks a Life Cycle. JFS Newsletter No. 52. Retrieved from www.japanfs.org/en/mailmagazine/newsletter/pages/027818.html.

[3] http://algantechnology.com.

ALGAN TECHNOLOGY



"HUSK-STICKS" have the look and feel of wooden chopsticks but are actually made primarily of rice husk.

The pipeline grows stronger

by Ma. Lizbeth Baroña-Edra

IRRI overhauls its breeding agenda for better service to farmers and for more efficient use of resources

ISAGANI SERRANO

DR. EERO Nissilä heads IRRI's Plant Breeding, Genetics, and Biotechnology Division.

The International Rice Research Institute (IRRI) is now embarking on an unprecedented overhaul of its breeding agenda to achieve two things: increase the adoption of its improved varieties and be more efficient with resources.

What steers the wheel?

Creating a new rice variety typically takes around 10 years, or even more, before it reaches farmers' fields. Because many of these breeding undertakings are still research or supply driven, what farmers really need and when they need it is an important factor that often gets lost along the way.

"Public breeding, which is what describes IRRI's, is often supply driven, yet we hope that our varieties get adopted and create an impact," said Eero Nissilä, head of IRRI's Plant Breeding, Genetics, and Biotechnology Division.

Dr. Nissilä, along with some donors and partners, thinks there is a better way to tap IRRI's breeding experience and structure.

"Improving crops is an incremental process; in other words, each breeding cycle produces new lines that are better than the previous ones," said Dr. Nissilä. The genetic gains, compounded over time, have a great impact on crop productivity, he explained.

"Increasing the genetic gains of public breeding from 0.5–0.8% to 2% or higher—a level that private breeding of temperate cereals has achieved—will result in more than a 35% yield difference over 20 years," he said. "We are taking lessons from private breeding—where the products are demand driven.

"We are not sacrificing the values of IRRI's previous breeding pipelines," Dr. Nissilä added. "We'll keep on with where we have been strong—and that is our trait development. It is varietal development that takes a lot of time, and where improvements can be made."

On its way to creating a demand-driven agenda, the Institute starts with these important steps: streamline the breeding and management processes, regionalize breeding material development and trials, make use of cutting-edge technologies, and use market research to guide breeding targets and priorities.

Efficiency now

Many public breeding programs around the world are often carried out in small groups; most of them conduct their various breeding activities on their own. But, the new approach envisions centralized and cross-cutting processes that will provide services to all breeding pipelines. This will allow the use of expertise in a single, effective

process. And, it will be cost-effective because it will prevent overlapping and duplication of work. In this way, resources can focus on state-of-the-art facilities that will make the work more efficient.

The priorities in the streamlining of functions and resources are delivery and maintenance of a high-quality database of breeding information, which allows greater exploitation of plant breeding data, as well as maintaining an unabated flow of genetic traits crossed into elite germplasm through continuing prebreeding activities.

Going regional

Since the 1960s, IRRI has developed its breeding lines and conducted trials at its Philippine headquarters. Undoubtedly, this system has produced several mega-varieties that farmers worldwide are now planting. However, these breeding activities need to be decentralized to target market regions.

Now, two breeding hubs have been established in South Asia and East and Southern Africa. These hubs serve as breeding pipelines, which will help IRRI focus its breeding work to match regional and local market needs.

Letting the market talk

Another important aspect in the new breeding approach is to understand market demand.

"The rice markets in Asia and East and Southern Africa have been evolving," said IRRI scientist Alice Laborte. "Food value chains have been transforming and rice market segments have become more diverse. We need to adapt to these changes, and the way to do it is to listen to what the market needs, and respond accordingly."

Taking the lessons of the market to the breeding drawing board is not going to be easy because preference for rice traits varies by regions. For instance, consumers in East Asia such as Japan and South Korea prefer rice with short and bold grains, while those in South Asia such as India and Bangladesh prefer long and slender grains.

Even within a geographic location, preferences for certain traits may also vary by gender, urban-rural markets, and socioeconomic class, explained Dr. Laborte.

"Rigorous surveys will be conducted to determine the traits preferred by rice farmers, consumers, and other value-chain actors across the target regions," said Dr. Laborte.

R. PANALIGAN

RESEARCHERS PERFORM a procedure to determine the presence of alleles or genes with a known function or importance.

"We will look into the geographic and demographic segmentation of rice environments to help identify priority traits in target regions."

Change is here

"Change has already started at IRRI," said Dr. Nissilä. "We introduce changes in our setup and system every cropping season, and we move forward quite fast now."

Dr. Nissilä explained that, before the wet season of 2013 starts, the newly restructured breeding pipelines of IRRI will also use a more efficient model by changing the breeding methodology.

Taking time to reflect on its people—the "life blood" of IRRI's breeding, Dr. Nissilä said: "IRRI's Plant Breeding, Genetics, and Biotechnology Division is world-class and its breeders and staff make it so. They know by heart the magnitude of the work we do, and so they understand the changes that need to happen to make their work reach new heights."

CHRIS QUINTANA

IRRI'S NEW breeding strategy is to be demand driven, in which farmers' needs on the ground dictate its research agenda. An example is this Filipino farmer's problem with flooding.

Ms. Baroña-Edra is a public relations specialist at IRRI.

R. RAMAN, AFRICARICE (4)

UGANDA: blazing a trail to rice success

by **Savitri Mohapatra**

MAP BY NEL GARCIA

Uganda's rice imports decreased and its food security improved because of its growing rice production

Uganda—widely known as "the pearl of Africa" for its exquisite natural beauty, diverse flora and fauna, and rich mosaic of cultures—is attracting attention today as a potential rice basket for eastern Africa.

Over the last few years, Uganda has been experiencing a remarkable rice boom supported by good farming practices, premium market prices, and favorable policies that have stimulated large private investment in the rice sector.

The growth of Uganda's rice production has contributed to greater food security and a reduction in rice imports. For instance, according to the Ugandan government, rice imports dropped between 2005 and 2008, which helped save the country about US$30 million in foreign exchange earnings.

The area sown to rice nearly doubled from about 80,000 hectares in 2002 to about 150,000 hectares in 2011. Similarly, paddy production jumped from about 120,000 tons in 2002 to more than 220,000 tons in 2011.

"The rice industry in the country has rapidly moved from improved seed to production to processing and to the markets over the last few years," said Robert Anyang, program officer of Public-Private Partnership and Market Access at Sasakawa Global 2000 (SG2000).

This is a feat that several rice-producing countries in sub-Saharan Africa would like to achieve. Yet, 10 years ago, Uganda was barely known as a rice-producing country in the region. So, what triggered the rice transformation?

NERICA fills the void

In 2000 and 2001, when the price of maize plunged in the region, Uganda's government and farmers were desperate for an alternative crop that could provide food security and income.

Through the timely assistance provided by SG2000 and the National Agricultural Research Organization (NARO), short-duration NERICA varieties developed by the Africa Rice Center (AfricaRice), including NERICA 1, 4, and 10, were identified as a suitable replacement for maize. NERICA 4 was released in 2002 and followed by NERICA 1 and 10.

"In a short time, NERICA 4 became so popular that, by 2008, it occupied almost 70% of the upland area under production," said Dr. Jimmy Lamo, a rice breeder at NARO.

The turning point

Gilbert Bukenya, the then vice president of Uganda, identified upland rice as a major strategic intervention for food security and poverty reduction. Because of Dr. Bukenya's advocacy, President Yoweri Museveni launched the Upland Rice Project in 2004. This is widely acknowledged as the turning point for the growth of Uganda's rice sector.

The campaign encouraged several nongovernment organizations (NGOs) and development partners to join forces with the Ugandan government. These were the Japan International Cooperation Agency, the United Nations Development Programme, the Food and Agriculture Organization of the United Nations, Oxfam, and the United States Agency for International Development, in addition to SG2000.

The government and these partners made major efforts to promote rice and strengthen the capacity of rice farmers, millers, traders, and extension workers.

The rice scheme also motivated private-sector players such as NASECO Seed Company, Grow More Seeds, Pearl Seeds, Victoria Seeds, and FICA Seeds.

"The Upland Rice Project is a success story of public-private partnership, with each partner playing a role from research to final product and commercialization," said Nicolai Rodeyns, managing director of NASECO Seed Company. NASECO was instrumental in the production and dissemination of certified seed of NERICA 4 under the trade name Suparica 2.

The breakthrough

However, the real breakthrough for Uganda's rice sector occurred in the mid-2000s when the Ugandan government lobbied successfully for the East African Community to impose a 75% tariff on rice imports (35% for Kenya), according to Mr. Anyang.

"As the Ugandan government didn't have the money to support subsidies, this was a good way to promote its fledgling rice industry and protect farmers from the influx of cheap imported rice," he commented.

The shift in government policy further stimulated rice production in the country and motivated the private sector to invest heavily in the sector. The focus gradually shifted from increasing rice production to improving postharvest handling, value addition, and marketing.

According to Mr. Venugopal Pookat, director of Tilda Uganda Ltd., one of the leading rice-producing companies in the country, locally produced rice can replace imported rice, only if it can be price-competitive, branded with consistent quality, and readily available on the market. Tilda Uganda Ltd. produces different types of rice to fill different market niches.

Similarly, small entrepreneurs have seized the opportunity to add value by developing niche products such as parboiled rice, which is not commonly available in Uganda.

Market integration

Public- and private-sector partners in Uganda's rice sector are aware that agricultural intensification goes hand in hand with agricultural sector development and market integration at all levels.

"The activities involved in rice value addition have potential to create wealth for all in the value chain, including farmers, transporters, middlemen, millers, traders, and the economy," explained Mr. Philip Idro, former Ugandan ambassador to China and current director of Upland Rice Millers Ltd. (URM).

The URM rice factory in Jinja, in eastern Uganda, is helping rice farmers to become part of agribusiness networks through which they can sell surplus crops and invest in their farms. For example, rice farmers who bring their paddy to the factory for milling find a ready market as they meet with rice traders at the same place.

"As long as farmers have a market, they always respond positively to that market so production is no longer an issue," explained Ms. Joan Rutaroh, program director of the Uganda Development Trust, a local NGO that provides technical assistance and arranges agribusiness loans for small and medium rice enterprises.

Joyce Lalam Otema, a rice farmer from Gulu, agreed. "With rice, you can't go wrong," she observed. "Each time you get a good yield, all the rice is sold in 2–3 months. You can either sell it locally or go to the nearest mill."

In addition to a large mill owned by Tilda Uganda Ltd., the country has 15 medium-sized mills and about 850 small mills with polishers and whiteners.

Lowland rice production

The boom in Uganda's rice production is also partly due to the resurgence of the Kibimba Rice Scheme. It currently produces about 20,000 tons of rice per year, which is 20% of the total rice produced in the country.

Although rice schemes are huge, they are still small considering Uganda has about 500,000 hectares of land suitable for seasonal lowland rice production. According to the National Rice Development Strategy, Uganda is expected to produce up to 335,000 tons of rice in 2013 and 500,000 tons in 2018. New lowland rice varieties are expected to be released soon by NARO.

"With everything in place, including the right policy and all the actors, the support of rice research partners through the new CGIAR Global Rice Science Partnership (GRiSP), and with the private sector, we can achieve this goal in the next 5 years," said Mr. Anyang.

Ms. Mohapatra is the head of Marketing and Communications at Africa Rice Center.

Ghana Celebrates Rice

by **Savitri Mohapatra**

R. RAMAN, AFRICARICE (3)

PROMOTING LOCALLY produced rice sustains cultivation of the crop, which leads to the country's economic growth.

Ghana shows the importance of its growing rice sector by celebrating its First National Rice Festival

A celebration unfolded with a pageantry of traditional drums, songs, and dances in Accra, Ghana, in November 2012. The reason for the festivity was rice as the country celebrated its First National Rice Festival. It showcased a wide range of high-quality local rice as well as traditional and innovative rice dishes prepared at the event by the best chefs in Accra.

Reflecting the growing importance of the rice sector in Ghana, the Ghana Rice Inter-Professional Body (GRIB) organized this first-ever National Rice Festival with the theme "Growing a vibrant rice industry through public-private partnership for food security." This coincided with the 8th General Assembly of GRIB, an association of rice farmers, millers, processors, agrochemical input dealers, and traders. GRIB now has about 10,000 members.

The Rice Festival aims to bolster support for the local rice industry through public-private partnership and highlights the importance of the rice sector in increasing food security,

JOHN K. Imoro Amoro, president of the Ghana Rice Inter-Professional Body (GRIB), speaks at the inauguration of the First National Rice Festival in Accra, Ghana.

reducing poverty, and creating employment in the country.

The event emphasized the need to shift urban consumers' preference from imported rice to quality Ghanaian rice to increase the market incentives for local rice producers and processors. It included training programs to strengthen their capacity for managing rice farming as a profitable business.

Rice has become an important staple in Ghana, particularly in cities and towns. The country's consumption continues to increase with the country's population growth, urbanization, and changing consumer preferences. However, the country's rice self-sufficiency ratio is only about 30%, leaving a 70% shortfall. Currently, Ghana spends about US$450 million every year on rice imports to meet its local demand.

Urban consumers prefer imported rice over locally produced rice. Because of poor postharvest handling, Ghana's rice is generally perceived to be of inferior quality.

But, GRIB and its partners have been striving to increase local rice production and quality. "The quality of local rice is as good as that of imported rice—in fact, even better, as the local rice is fresh and without pesticides," said John K. Imoro Amoro, GRIB president. "GRIB is stepping up its efforts to institute quality control mechanisms for local rice in order to meet international standards."

Mr. Imoro Amoro highlighted the challenges faced by the Ghanaian rice industry in the areas of technology transfer, credit, and seed system. "Research is crucial as we need updated information on improved seed, good agronomic practices, and appropriate technologies," he said.

He cited an example of improved parboiler technology developed by the Food Research Institute, Council for Scientific and Industrial Research in Ghana, which was successfully imparted to women parboiler groups through GRIB.

The Rice Festival brought together representatives of rice stakeholders, including farmers, millers, processors, traders, development agencies, national and international research organizations, and donors. It was inaugurated by Mr. Lemuel Kwashie Martey of Mannah Farms Limited, who was named as Ghana's best farmer in 2012.

Ms. Mohapatra is the head of Marketing and Communications at Africa Rice Center.


WOMEN HAVE a strong role in Ghana's rice production.

A human-eye view of birds

by **Alaric Francis Santiaguel**

Migrant snipe

©SEGFREDO SERRANO

Feathers in the fields *showcases the many bird species that frequent IRRI's research farm with compelling images, videos, and sounds to create an engaging educational exhibit*

To the untrained eye, the research farm at the International Rice Research Institute (IRRI) in the Philippines may look like nothing more than a verdant sea of rice plants. But, through the eyes of bird enthusiasts and the lens of bird photographers, it is a habitat for many spectacular bird species.

In *Feathers in the fields: The birds of IRRI*, bird photographers Tirso Paris, Jr. and Segfredo Serrano exhibit a bevy of bird species (see centerfold) they have captured via their cameras over the years, representing a portion of their portfolios of what Dr. Paris described as their "addiction."

"Bird photography is a passion," Dr. Paris said. "You need to be a little bit crazy to go into it. It takes a lot of money, time, and patience to capture beautiful images of birds. But it is very addictive."

Bird photography also requires special skills that go beyond being very efficient with a camera, according to Dr. Serrano.

"You need to be a good bird watcher and know the habits and forms of birds so that you can easily identify the species on the run," he said. "And, you have to have a genuine affection for your subject. If you don't have a genuine affection for our avian friends as part of our environment and their role in our environment, it will be very difficult to have the required patience to document your subject."

The rewards of their patience and efforts are stunning photographs that reveal the avian world behind the green curtain of rice that will no doubt surprise many.

"The fascinating feathered creatures featured in this exhibition, some native to the area while others use IRRI as a *stopover* site on their migration, provide a glimpse of birds that are rarely seen by most people—even those who work in the fields every day," said Paul Hilario, curator of the Riceworld Museum

and Learning Center where the exhibit will be on display through September 2013. "These birds are alert to movements and sounds, and are quick to hide or use natural camouflage."

Many might assume that bird photography is best done in undisturbed areas but agricultural areas can double as bird sanctuaries. Although farms cannot replace natural wetlands, flooded rice fields act as an artificial wetland and can provide some resources for birds, according to Mr. Richard Smedley, an IRRI scholar who studies birds in the experimental fields (see *Don't scare away the birds!* on pages 24 to 25).

Keeping a healthy rice ecosystem is a target for IRRI on its research station. For example, IRRI uses integrated pest management (IPM), which reduced pesticide use by 96% between 1993 and 2008, and encourages richer natural biodiversity. "Although we don't have direct evidence on the impact of the reduced pesticide use, it is certainly a contributor to the richer bird life in and around the farm," said Dr. K.L. Heong, an IPM expert at IRRI.

Most farmers may not be as happy, though, to see thriving bird communities flocking to their fields because they are widely regarded as pests. "They are seen in association with rice and they're presumed to eat rice, but that assumption may not always be correct," local bird enthusiast Paul Bourdin explains. The diet of the lesser coucal, bee-eater, swallows, pacific skylarks, and pied bushchat consists almost entirely of insects, he explained.

To help people better understand that not all birds are pests, *Feathers in the fields: The birds of IRRI* will include descriptions provided by Mr. Bourdin about each species on display at the exhibit, including their scientific, English, and Filipino names; diet; and habits. Read these descriptions online at IRRI.org/ricetoday.

Mr. Santiaguel is a writer at IRRI.

Feathers in the fields: The birds of IRRI

A photo exhibit
May through September 2013
Asia Room
The Riceworld Museum
IRRI, Los Baños, Laguna, Philippines

Little egret

Men of the same feather

A look at the people behind the Feathers in the fields: The birds of IRRI

MICHAEL JOYCE (2)

Tirso Paris got into bird photography about 3 years ago when he upgraded from a point-and-shoot camera to an SLR. Originally, he used it to shoot events, plants, and butterflies, but never birds. Until one day, having bought a longer lens, he was able to take a nice photo of a sunbird— and there was no looking back after that. Dr. Paris finds birds to be beautiful subjects and he now has thousands of photos taken from various locations, including his backyard. His motivation for bird photography is capturing their images for posterity and telling the world that birds are valuable and should be preserved.

ISAGANI SERRANO

Segfredo Serrano, undersecretary for policy and planning of the Philippine Department of Agriculture, started bird watching and photography in 2007. Although he has visited many birding sites in the Philippines and around the world, he considers the Mt. Makiling area as his base. Dr. Serrano spends most weekends observing and photographing birds in the fields of the University of the Philippines in Los Baños and at IRRI, and in the forest of the Mt. Makiling National Park. He has two daughters, who are also avid birders and bird photographers. His son Isagani is one of the *Rice Today* photo editors.

PHILLIP O'TOOLE

Michael Joyce is a U.S.-based documentary producer who has mostly focused on biomedical topics for the past 20 years. He came to IRRI in November 2012 to help start IRRI Radio. He thoroughly enjoys covering a discipline he previously knew very little about. "I grew up in a medical town surrounded by corn fields," says Michael. "IRRI and the Philippines in general are ideal places to listen, observe, and learn. Nearly everything is new to me—the science, the culture, and the environs. In my line of work, naiveté has its privileges!"

Paul Bourdin (*below left*) is a math teacher at Brent International School, Manila. He has been bird-watching since childhood—and has lived and birded in many countries in Africa, Europe, and Asia. He has, in addition, undertaken birding expeditions to Australia, Brazil, and the U.S. He is registered as a bird ringer in South Africa and the Philippines, and has contributed to ornithological journals and other birding publications around the world. He has lived in Los Baños since 2008 and has considered the rice fields at IRRI to be his local patch since he arrived.

Richard Smedley (*below right*) counts himself lucky that he has been able to make an academic career out of his passion for birds. Since 2006, he has been studying birds in both his home country, the UK, and South Africa. He started his PhD in October 2011, with the University of Reading, but is based in the Philippines full-time. He believes that every bird has "a special something" that makes it worth watching and studying, and he hopes that he can continue working with birds for the rest of his life.

Don't scare away the birds!

by **Richard E. Smedley**

Most birds are not enemies of rice farmers; some actually help control pests

As the sun rises and casts its first beams of light over the experimental rice fields at the International Rice Research Institute (IRRI), there is a flurry of activity of birds coming in to feed, or leaving the rice fields to roost for the day. They are everywhere—in the air, on the roads, and between the fields. This usually occurs between 5:30 and 6:30 in the morning.

Rice fields create a unique habitat within agriculture. Unlike other crops, rice is almost constantly flooded—an artificial wetland, which is very attractive to birds of all kinds, especially if the local natural wetland is drier than usual or has been lost.

Rural myth

Studies have been conducted on birds in rice fields although research has been mostly within the U.S. or Europe. In Asia, however, little work has been conducted on this topic. Thus, knowledge gathered by farmers on birds and their effect on the crop comes through hearsay and speculation.

What exactly do these feathered creatures do in rice fields and do we want to keep them or eradicate them?

The biggest myth about birds is that *all* of them eat rice. This just isn't true. Observations conducted within the IRRI experimental farm, during the reproductive and ripening phases of the rice crop, found more than 50 different bird species, but only four are known to feed on rice. The majority of the others feed on insects only.

Easy targets

"*If it flaps, scare it away!*" This idea common in rice farming might be causing more harm than good, especially at certain times of the year. Different birds have different diets, and distinguishing the "good guys" from the "bad guys" can become difficult.

Intermediate egret


Little egret


Yellow bittern

Here are some of the "good guys":

- Egrets, the white birds often seen in rice fields, eat some invertebrates as well as fish, crustaceans, frogs, and reptiles.
- Herons and bitterns, often scared out of rice fields, also eat fish, crustaceans, frogs, reptiles and aquatic insects, snails, and some small mammals.
- Finally, birds of prey that can be found in a rice habitat, such as pied harriers and grass owls, hunt mammals within the fields, but also keep the number of smaller birds down.

All of these are easily targeted by farmers as they are large and relatively easy to catch, but they could be helping the crop through pest management. For example, the tree sparrow is common throughout the Philippines, but is endangered in the United Kingdom, with many conservation programs trying to save the remaining population. There are even farmer incentives to promote the habitat the birds require in an effort to entice them back. Studies in the UK have shown that they eat only invertebrates during breeding, as they require more protein in their diet.

Convicted without evidence

The alleged bad guys are those that are known as *maya*. This Tagalog word is used to describe a particular bird that feeds on rice grain. However, there is a

> The biggest myth about birds is that all of them eat rice. This just isn't true.

common misconception within the Philippines in the use of that word. *Maya* actually refers to four different bird species, all of which can be found at IRRI. These are tree sparrows (*Passer montanus*) and three species of munias (*Lonchura* spp.) that are in the Philippines: chestnut, scaly-breasted, and white-bellied. Although these birds eat rice grains in at least part of the year, effective species management requires a better understanding of their lifestyle and behavior.

These birds are seen periodically feeding in rice fields and sometimes from the plants directly. However, how much damage they are actually causing is unknown. With birds able to fly great distances and no systematic method of feeding (that we know of), recording this damage would require surveying a large number of rice fields over a long time. Indirect methods of damage assessment include mathematical models and farmer estimations. However, these all rely on farmers' ability to accurately record bird flocks, movements, and locations, as well as all the other factors that contribute to yield loss. A standard method of quantifying bird damage in rice fields still needs to be developed.

Winged scapegoats

Why do birds get blamed? Maybe it has something to do with their skill, which we all wish we had—they can fly! It seems that their major advantage in the wild is one of the main reasons they have gained a reputation for damaging rice.

Farmers often point out flocks of birds flying out of their fields. More often than not, farmers have not seen where these birds have come from, and they do not know what these birds have been eating, but they *do* see them leaving the fields.

Chinese pond heron

Tree sparrow "maya"

Scaly-breasted munia

White-bellied munia

Although other pests, such as rats, display physical and measurable damage to rice, birds do not. Farmers cannot always see rats move within the fields, but they do see birds.

To ponder upon

With few bird deterrents available, little can be done to prevent birds from flying in or out of fields and methods of control need to be enhanced. All birds are so incredibly intelligent that they can habituate themselves to new stimuli quickly. For example, standing a flag close to a field in an attempt to scare birds only provides them with a new perch on which they can sit. The use of "bird scarers" will work only as long as the method of scaring, either rattling tin cans or shouting, is ever-changing.

It would also help if one understood which birds to scare and which ones to leave alone. To completely "bird-proof" a rice crop, planting in greenhouses or under nets is the only option. But, this will disable the positive effects that some birds provide—a delicate balancing act that will be understood only if further research into the species seen in rice, particularly their behavior and lifestyle, is conducted.

So, the next time you are in a rice field, take a moment to look up and see what is close by. Chances are you will be very close to some of our feathered friends. Watch as the egrets chase aquatic prey between the rice hills or as the swallows sweep over the top, collecting flying insects as they go. Take a moment to marvel as they duck and dive through the air and just think of how rice provides a benefit to many species, not just by providing food.

Mr. Smedley started his PhD at the University of Reading, UK in 2011. He is continuing his studies as an IRRI scholar in the Crop and Environmental Sciences Division. He enjoys studying the birds in the experimental fields, as well as sites in Isabela and Bohol provinces in the Philippines.

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KAMALA GURUNG (*right*) solicits women's views and preferences with respect to rice grain quality.

Giving women a VOICE

by **Lanie C. Reyes**

Kamala Gurung makes it her mission to promote gender equality and empower women farmers in South Asia

Kamala Gurung was drawn to rural development work at an early age. Her exposure dates back to her high-school years in Nepal when she served as an enumerator for a community survey. After high school, she asked her parents if she could study forestry at the University of the Philippines in Los Baños (UPLB), nearly 4,000 km away!

Kamala's mother was against the idea at first. Her mother's apprehension was not about her being so far away from home because she had stayed in a dormitory most of her school years. It was more about the nature of the work of a forester. "It's too dangerous for a woman," her mother said.

But, for Kamala, it was not difficult to imagine herself as a forester because she used to trek the mountains of Gorkha and Pokhara in Nepal with her father, who was then a British-Gorkha army officer. "I think my father's love of nature rubbed off on me," Kamala said.

KAMALA (*center*) talks with women in Bangladesh to understand the critical role they play in rice farming.

KAMALA GURUNG (2)

Eventually, with her parents' support, Kamala earned her degree from forestry at UPLB and then worked back home in Nepal as a natural resource management officer. Through her constant interaction with farmer communities, she became more interested in the social aspects of her work. This is where she became deeply involved in social issues, and problems of the marginalized sectors of the community—including women in the agricultural sector.

Advocating for gender equity

"This is what I chose to be," asserted Kamala, who takes pride in being a self-proclaimed gender equity advocate. "Both my MS and PhD degrees are in gender development and social change in the agricultural sector." Kamala obtained her MS degree from Clark University in the United States and her PhD from James Cook University in Australia.

Kamala now enjoys her work at the International Rice Research Institute (IRRI) as a social scientist specializing on gender issues in agriculture. "This job gives me a sense of mission to help improve the lives of rural people, especially poor women," she said.

"Working under the USAID-funded Cereal Systems Initiative for South Asia (CSISA) project in Bangladesh, Kamala has been influential in mainstreaming gender in planning, monitoring, and evaluating the project," said Thelma Paris, IRRI senior scientist. CSISA aims to increase food, nutrition, and income security in South Asia through sustainable intensification of cereal-based systems. It is a collaborative project among key organizations such as IRRI, the World Fish Center (WorldFish), and the International Maize and Wheat Improvement Center (CIMMYT).

"Gender inequalities in access to productive resources and technologies in rice farming are more pervasive in South Asia," Kamala explained. "To reduce these inequalities, it is important to understand the crucial roles of women as farmers, consumers, and income earners in relation to men as well as women's socioeconomic and cultural barriers in ensuring food security and livelihoods."

In specific regions of Bangladesh, the poorest women do transplanting and weeding in the rice fields as unpaid family workers or as hired agricultural workers. However, in all regions, as soon as harvesting is done, poor women are mainly responsible for manual threshing, winnowing, cleaning, drying, selecting, and storing grains and seed as well as parboiling rice for home consumption or for sale.

"Since women in Bangladesh play a critical role in rice postharvest and processing activities, postharvest losses can be reduced in the country by providing women with technical know-how among other support," she said.

Aside from conducting a series of training activities on postharvest technologies, the CSISA project provided a group of women rice farmers in Bangladesh with a pedal thresher for their use and for renting out to other farmers. CSISA also provided some training to improve their entrepreneurial skills.

"Truly, many other opportunities are now available to improve women's social and economic status by improving their access to technologies and training opportunities through IRRI-CIMMYT-WorldFish collaborative projects under CSISA," Kamala said.

Kamala explained that the project focuses on women because they are usually the disadvantaged group in society. "But, gender equity is not just about women," she said. "It is about gender roles and relations based on cultural norms."

"In Bangladesh or elsewhere, if you don't inform or involve the husbands, the wives won't attend any project-related activities such as focus group discussions, meetings, or training activities," Kamala continued. "So, I always go and talk with the male member of the household—often the husband. I try to convince him why his wife needs to participate in these activities. Otherwise, it will not work; there'll be conflict in the family."

Expanding role of women

Kamala pointed to recent data from FAO that show that the role of women in agriculture is changing and

INFOLADIES BIKE from one remote village to another to help women in Bangladesh get access to information on agriculture.

D.NET

increasing because men are going abroad to work.

But, because women-headed households have no technical skills, they rent out their rice fields to other farmers. This makes it important to involve women in training and awareness programs such as on new varieties and associated improved crop management practices for submergence- and saline-prone rice areas.

Kamala passionately believes that women should have a say in research and development activities. "We should include their voice: first, in our research work, and second, in the policy-making and decision-making processes, and we should give them access to resources such as information and communication technologies."

Info at the doorsteps

More often than not, women cannot go out of their village to attend training activities because they are busy with their work.

So, "why not bring the technologies to them?" Kamala thought.

"This year, she pushed for the exploratory testing of tapping the 'InfoLady' model to reach women farmers," said Dr. Paris.

The InfoLady project was created in 2008 by D.Net, a Bangladesh-based social enterprise (www.dnet.org.bd), and other community organizations. D.Net recruits women and trains them for three months to use a computer, the Internet, a printer, and a camera. It also arranges bank loans for the women to purchase bicycles and equipment.

Equipped with a laptop, Internet access, and a bike, an InfoLady goes from one remote village to another to help women get information ranging from health, agriculture, and education to government services.

To carry out the InfoLady model in Bangladesh, Kamala and the rest of the CSISA project team held a three-day training for 17 InfoLadies to help transfer agricultural technologies to rural farmers—particularly women. The training covered improved cropping and intercropping systems, fertilizer management, maize varieties, rice-based postharvest technologies, and basic aquaculture and pond management, among others.

WOMEN IN Bangladesh rate each rice variety during a participatory varietal selection (PVS) activity.

ISAGANI SERRANO

"We've come a long way since the beginning of the women's rights movement in the 1970s thanks to gender equity advocates such as Dr. Gelia Castillo, a Filipino national scientist and former visiting scientist at IRRI," Kamala pointed out. Dr. Castillo started the Women in Rice Farming Systems network at IRRI in the mid-'80s.

In addtion, Dr. Paris paved the way for much of the progress in integrating gender concerns in IRRI's research and development. She encouraged researchers to involve women (at least 30% among the participants) in the participatory varietal selection (PVS) activities for released and prereleased varieties in rice areas prone to drought, submergence, and salinity under the Stress-Tolerant Rice for Africa and South Asia (STRASA) project funded by the Bill & Melinda Gates Foundation.

Thus, more women now have a voice in the quality traits they look for in varieties than before. Changes are not only happening in the mind-sets of researchers in the field but also in the workplace. "We have more women on research teams under the CSISA project than before," Kamala added. "Many of them have gone through IRRI's Leadership Course for Asian and African Women in Research, Development, and Extension."

Kamala shares a view with her supervisor and mentor Dr. Paris that removing gender inequality in the context of traditional mind-sets—especially in Bangladesh and India—is not easy. That is why they both believe that changes can happen through a concerted effort and support from policymakers, research leaders, partnerships with government and nongovernment organizations, and, of course, the women farmers themselves.

As they work with key partner organizations, Kamala's work, along with the CSISA team's efforts to empower women and give them a voice, is crucial to attaining global food security. According to the FAO's 2010-11 State of Food and Agricultural Report, if women in rural areas had the same access to land, technology, financial services, education, and markets as men, agricultural production could be increased and the number of hungry people reduced by 100 to 150 million.[1]

Ms. Reyes is the managing editor of Rice Today.

[1] www.fao.org/news/story/en/item/52011/icode/.

Women in motion

In celebration of *International Women's Day*, we honor the contribution of women in improving rice production and food security in their respective communities and countries.

A woman's touch saves seeds

by **Sophie Clayton**

Rural women are the "seed custodians" in Bangladesh. They play the primary, but typically unrecognized, role of preserving rice seed after harvest and storing it until it is used to plant the next season's crop.

If the seed is in poor health, the crop suffers and less rice is harvested, which can leave families hungry. But, if the seed is in optimal condition, the crop can grow well and produce more rice—meaning more food and more money. Having healthy rice seeds could take families and communities a step away from poverty.

However, reaching Bangladeshi rural women, who may be socially isolated or have limited access to basic learning resources, makes sharing of practices for improving the quality of their seed difficult.

The Ashroy Foundation has taken a female-friendly approach that has proven effective—and it doesn't involve only women. Improved but low-cost techniques that build on local knowledge to upgrade harvesting and seed management processes such as drying and cleaning are shared with farmers.

"We organized a series of meetings in the courtyard (within the village) and personal consultations with the women's husbands, religious leaders, and other influential people in the local community," Momotaz Khatun, executive director of the Ashroy Foundation, explains.

ISAGANI SERRANO

"During these sessions, we emphasized that, if women practice the improved methods of rice seed preservation, this will lead to increased yields, increased surplus, and more income for their families."

The work extends across Khulna, Satkhira, Narail, and Bagerhat districts of Bangladesh and has seen 23,000 farmer participants, including 17,250 women.

According to Ms. Khatun, 83% of the participants adopt the improved practices they learn, and the added benefits include giving the women social mobility and improving family cooperation, especially from their husbands.

This activity is part of the Cereal Systems Initiative for South Asia (CSISA) in Bangladesh. The International Rice Research Institute (IRRI) provided technical guidance and demonstrated the improved technologies.

Ms. Clayton is the public relations manager at IRRI.

MATTY DEMONT

Women build a brand

by **Ma. Lizbeth Baroña-Edra**

Appearances matter—at least for African women who were part of a project that sought to understand how marketing practices influence consumer preference between locally produced and imported rice.

In Africa, women undertake much of the work in traditional rainfed, mangrove, and upland rice production systems. However, they often have limited access to land for rice growing, particularly in irrigated environments. Therefore, they typically specialize in postharvest activities, such as processing, quality control, and marketing. But, in order to compete against massive rice imports, they need to effectively market local rice to consumers.

A study with Khar Yalla Gueye, a women's association in Senegal in West Africa, was conducted at Africa Rice Center (AfricaRice) by economist Matty Demont, Fulbright research fellow Caitlin Costello, and sociologist Maïmouna Ndour. The association aims to help women market their local rice varieties more effectively.

AfricaRice provided training programs to women on business, entrepreneurship and marketing, provided mechanized processing equipment, and developed a home brand for their company.

Packaging is a significant part of how consumers in Senegal decide which rice to buy. Furthermore, experimental auctions have shown that consumers are willing to pay price premiums of 17% for their preferred brand. This demonstrates the need for a greater focus on marketing research as a way to improve the competitiveness of local rice.

"Marketing is an important tool in adding value to local rice in Senegal," explained Matty Demont, IRRI senior economist. "And, it should be used effectively as organizations work toward increasing demand and creating a successful rice sector.

"Investing in a local brand and creating a distinguishable commercial identity for the women's association Khar Yalla Gueye in Pont Gendarme may be one step toward increased competitiveness of the domestic rice sector in Senegal with concomitant impacts on women's livelihoods," he concluded.

The study was supported by Syngenta Foundation and the U.S. Fulbright Program.

From one woman's hand to a village's choice

by **Ma. Lizbeth Baroña-Edra**

Upon seeing for herself the promise of Swarna-Sub1, Asha Singh, a mother of two, decided to encourage her village in Sitamarhi, Bihar, India, to try the new rice variety for themselves.

She mobilized 200 farmers to demonstrate how well the flood-tolerant variety performed. She organized women's meetings to educate them about climate change and explained how Swarna-Sub1 could help reduce their crop losses due to flooding.

ISAGANI SERRANO

Such is the influence of a woman who has been convinced that a technology is good for her and her community.

Yet, Asha is one among millions of rural women who have been left out by agricultural research and development programs, despite the fact that women are the backbone of India's agricultural workforce. The roles they play are vital in the day-to-day maintenance of their rice farms.

The Stress-Tolerant Rice for Africa and South Asia (STRASA) project has consistently paid special attention to the roles of women in its programs. The STRASA project involves them in participatory varietal selection (PVS). In PVS activities, women like Asha help choose, evaluate, and disseminate new rice varieties that suit their needs.

"Women farmers have been taking the lead in selecting new rice varieties for stress-prone areas," said Dr. Thelma Paris, IRRI scientist and gender specialist.

"These women contribute in decision-making on varietal selection by giving feedback on the cooking and eating quality of rice," she said. "In this way, women make an important contribution in identifying suitable new varieties."

Ms. Baroña-Edra is a public relations specialist at IRRI.

Maps

The when and where of rice

by **Jane Girly Cuerdo, Lorena Villano, Mary Anne Gutierrez, Cornelia Garcia, Alice Laborte, Mirco Boschetti, Sander Zwart,** and **Andrew Nelson**

Global rice areas produced more than 690 million tons of rough rice in 2012.[1] If we divide this by the number of seconds in a year, then—on average—nearly 22 tons or about 440 sacks (50 kilograms each) of rice were harvested every second. We do know, however, that such a simple calculation does not sufficiently account for the variations in planting and harvesting dates within a year and across all rice-growing areas. So, how much rice is harvested in a given location and at a given time?

To estimate the distribution of the world's rice production through the year, we compiled detailed rice planting and harvesting dates by growing season in all rice-growing areas from various sources and linked this global rice crop calendar database to detailed rice production statistics (Figs. 1 and 2).

Information on when rice is planted and harvested, and the associated production in different locations, is important to better assess food security, and seasonal and geographic variations in food supply. Rice statistics are often available annually or, at best, by season in a few countries. Information on monthly rice output can be used to analyze spatial and seasonal production trends in rice-producing countries, and to assess and predict price fluctuations in global, national, and local markets. This, together with information on climate shocks and rice stocks, can be useful for policymakers to better prepare for potential significant shortfalls in food production at certain times of the year.

The crop calendar currently used refers to average planting and harvesting dates in an area over several years. As a next step, we will use actual growing seasons derived from analyzing remotely sensed data, together with better estimates of the seasonal distribution of rice production used.

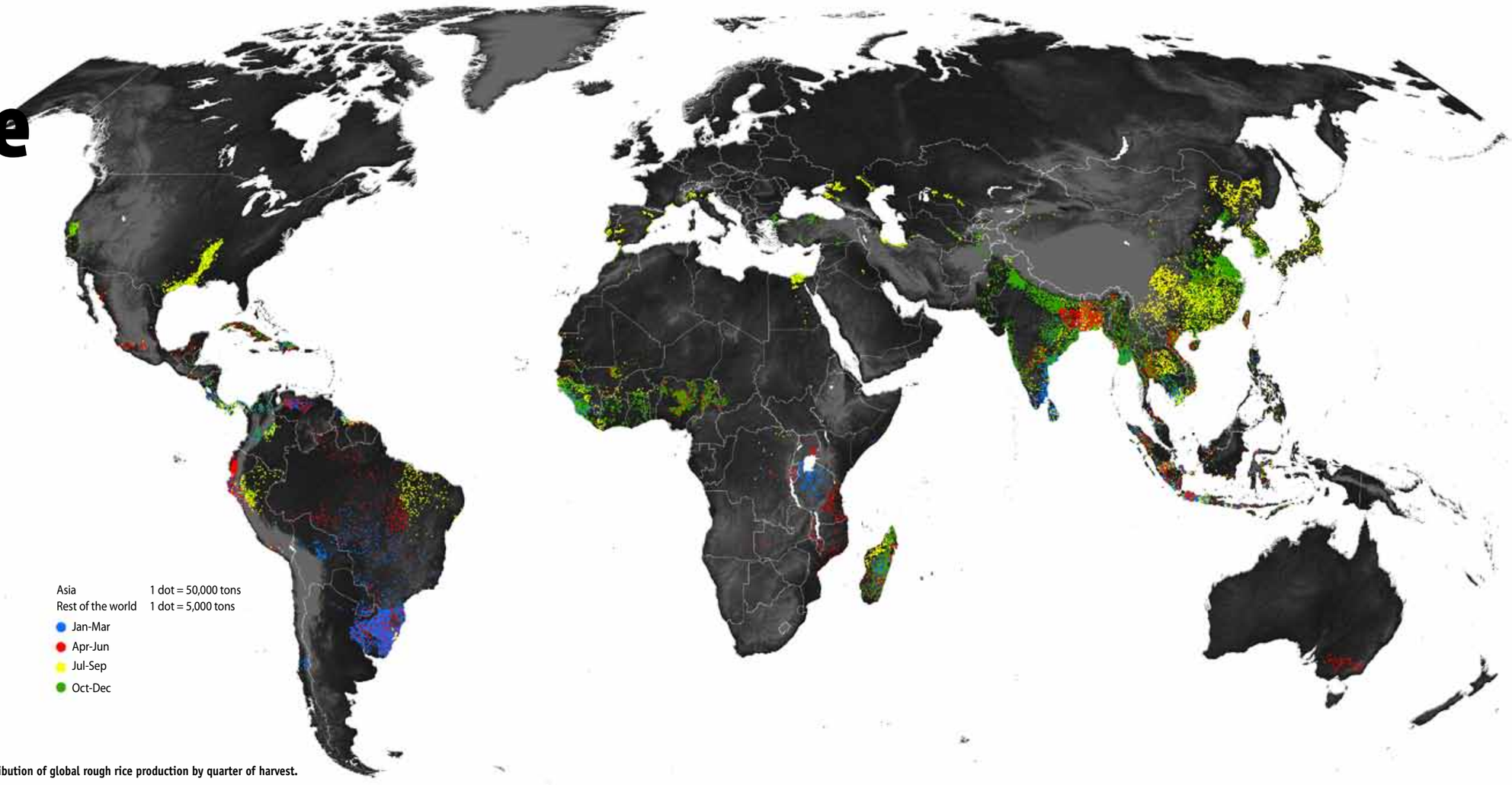


Fig. 1. Distribution of global rough rice production by quarter of harvest.

[1] USDA. Production Supply and Distribution Online. www.fas.usda.gov/psdonline/psdHome.aspx.

Ms. Cuerdo, Ms. Villano, and Ms. Gutierrez are researchers and Ms. Garcia is a researcher and cartographer at IRRI. Ms. Laborte is a GIS specialist at IRRI. Dr. Boschetti is a researcher at the Institute for Electromagnetic Sensing of the Environment (IREA-CNR). Dr. Zwart is a remote-sensing and GIS specialist at Africa Rice Center. Dr. Nelson is a geographer and head of the GIS laboratory at IRRI.

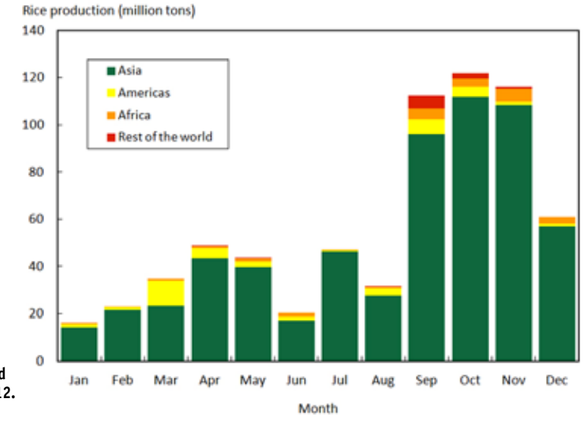


Fig. 2. Rough rice production by geographic region and month of harvest 2012.

The monk who ate no rice

story by **Alice Flinn-Stilwell**
illustrated by **Sherri Maigne Meneses**

In Asia, many people eat rice three times a day. For them, rice is life; but, in this Japanese fable, a "holy man" seems to have given up eating rice.

Many years ago in Japan, ascetic monks abounded. They were highly revered and respected. They became models for everyone to look up to and emulate.

These monks deprived themselves in various ways. Some gave up sleeping on mats, preferring hard stones instead. Others walked barefoot many miles to inspire others to shun physical comfort.

One monk even gave up eating rice. Throughout the land, people were amazed when they heard of his abstinence for they could not imagine life without eating rice.

"Everyone eats rice three times a day, and for snacks as well," the people marveled. "How can he live without rice?"

When they learned that the monk ate pine needles instead of rice, they were even more amazed. They could only presume that he was very dedicated to be able to do such a thing.

Over time, he became so well known and revered that the Emperor invited him to live in the imperial garden. So, the monk came and lived in a small bamboo house in the Emperor's garden. Every day, he sat cross-legged on his mat, meditating for hours and hours at a time. The Emperor found him to be extremely devout.

"Who else could sit cross-legged so long, and who else could live without rice, eating only pine needles?" the Emperor wondered. "He must truly be a saint."

However, a few of the young attendants in the Emperor's court were not so sure about this monk that everyone talked about. They all agreed that he seemed impressive, and they treated him with the respect the Emperor demanded. But, they found it hard to believe that he ate no rice.

One day, they decided to visit the monk.

"My good holy man, how many years has it been since you last ate rice?" they asked.

"Ah, it was many years ago when I was but a young man," he said, flattered, in a very worldly way, by their interest. "I'm nearly eighty now."

As the young lads walked away, their thoughts were occupied with the monk.

"If the monk eats only pine needles and no rice, what can his feces look like?" one of the men wondered. "They must look strange."

His friends agreed, but dropped the matter quickly.

Several days later, these court attendants were relaxing, sitting round a table drinking. They'd all had a little too much rice wine when one of them suggested, "Let's check the monk's outhouse and look at his feces, which must be strange."

Not one objected. So, a little drunk, they crept to the ascetic's outhouse. There, they found not the remains of pine needles but the remains of rice.

"How can this be?" they asked each other. "Where does he get his rice from?"

They were determined to find out. Quietly, they waited outside the monk's house until he left for his daily walk. Then, they crept inside. There was little in the tiny house, so there were not many places to look.

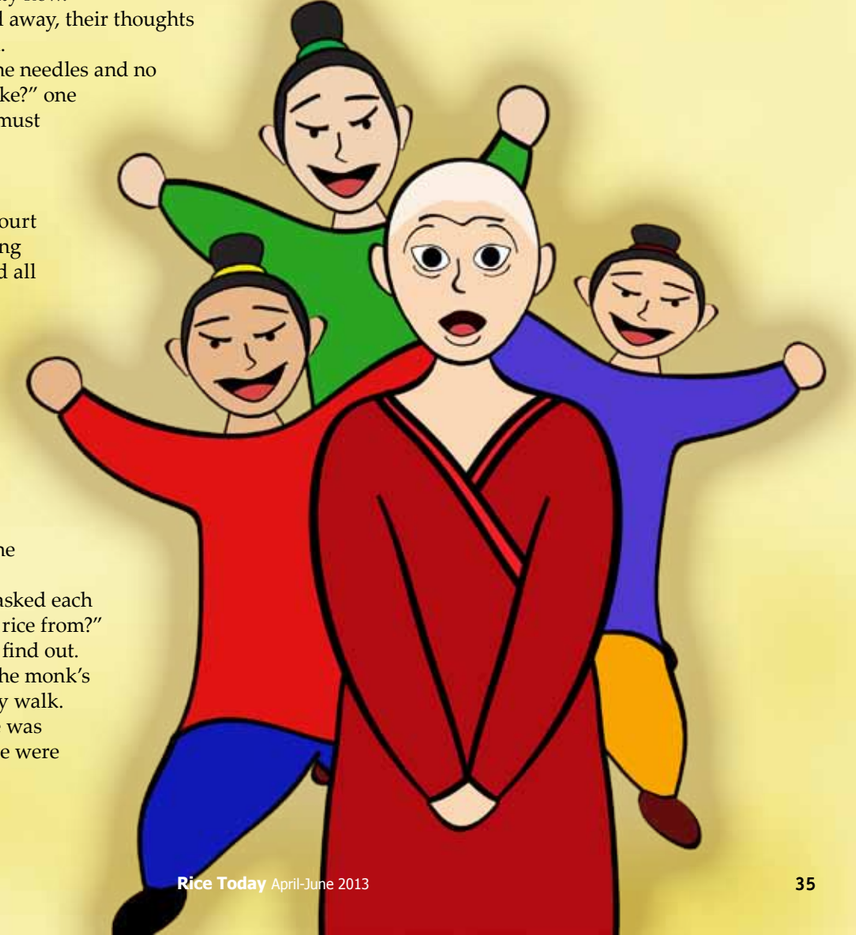
They picked up the small mat the monk usually sat on. Underneath, the earth was soft, not nearly as hard as you would expect if someone sat there day after day. They wondered what they might find, but they didn't have to dig far before their suspicions were confirmed. They found a sack of rice.

"Aha!" said the young fellows. "Well, well!" They nodded their heads in tipsy agreement and they carefully put back the soil and the mat so nothing looked disturbed.

They waited for the monk to return. He was totally surprised and taken aback to find his small house crowded with young men, and all grinning broadly. Then they laughed at him and chanted: "Rice poop saint! Rice poop saint!"

His secret uncovered, the disgraced and humiliated ascetic fled. No one has ever heard of the monk who gave up eating rice since then.

Ms. Flinn-Stilwell is a writer based in Hobart, Australia. This story is part of her forthcoming book, Rice—a grain with many stories, *a collection of 28 legends about rice and the many customs associated with this amazing grain. Ms. Meneses is a communications associate at IRRI.*



Rice diplomacy in South Asia

by **V. Bruce J. Tolentino**

STRASA-BANGLADESH

WORKING TOGETHER (*from left*) H.E. Shri Ashish Bahunuga, secretary of agriculture and international cooperation of the Ministry of Agriculture, India; H.E. Matia Chowdhury, minister of agriculture, Bangladesh; and H.E. Monzur Hossain, secretary of agriculture, Bangladesh.

Rice science is building bridges across the political borders of Bangladesh and India

By serendipity, the scientific work by the International Rice Research Institute (IRRI) is building bridges across difficult political borders to help achieve shared goals in food security and poverty alleviation.

The STRASA project

Over the past year, the Stress-Tolerant Rice for Africa and South Asia (STRASA) project has catalyzed a series of discussions that have brought together officials of Bangladesh and India, at both high and working levels, to discuss ways to share rice germplasm and improved production technology for mutual benefit.

The STRASA project works closely with the agricultural and rice research centers of South Asia and Africa to further deepen and then disseminate, in as participatory a manner as possible, the results of scientific research spearheaded by the IRRI.

Research under STRASA responds specifically to the needs of rice farmers and consumers in areas unfavored by nature for rice production. Rice farmers in unfavorable areas have to contend with unirrigated or rainfed farms, poor and saline soils, drought, flood, and heat. Because of these major constraints, most of these farmers have been left behind in the development process.

Moreover, the STRASA project anticipates the worsening of challenges that rice producers in unfavorable areas face as the devastating effects of climate change unfold.

Facing seed issues, together

In February 2013, a large delegation representing the full seed bureaucracy of India traveled to Dhaka. The Indian delegation was headed by H.E. Shri Ashish Bahunuga, secretary of agriculture and international cooperation of the Ministry of Agriculture, India. The group also included senior officials from key offices concerned with seed production, distribution, and certification in India. These were the Indian Council for Agricultural Research (ICAR), represented by Deputy Director General for Crop Science Dr. Swapan Datta, and the seed departments of several Indian state governments.

The Bangladeshi government welcomed the Indian visitors with excitement and with open minds and hearts. H.E. Matia Chowdhury, minister of agriculture, personally headed the Bangladeshi delegation, which included counterparts from all the relevant agencies of the government of Bangladesh, especially H.E. Monzur Hossain, secretary of agriculture.

The Indian and Bangladeshi delegations met in early February 2013 in Dhaka at a workshop organized under STRASA, led by Drs. Abdelbagi Ismail and Umesh Singh of IRRI. The workshop was cordial yet intensive, laying out the concerns that the two nations faced in sharing technology for mutual benefit.

The following challenges that the officials from both Bangladesh and India face are complex yet crucial for shared progress in rice productivity for the neighboring countries:

- Joint evaluation of improved rice varieties for release in areas with similar agroclimatic conditions in both countries.
- Collaboration to resolve issues on ownership, intellectual property rights, and germplasm exchange.
- Reciprocal acceptance of research data, including results of farmers' participatory varietal selection activities, generated in one country to support varietal release in the other country.
- Streamlining of evaluation to reduce processing time from two to three years to only one.
- Collaboration to formulate seed protocols and guidelines compatible across countries.

ARB 6 is a high-yielding and drought-tolerant variety, which has been developed under the STRASA project.

STRASA-INDIA (2)

SWARNA SUB1, a submergence-tolerant variety, has been adopted by many farmers in countries such as India and Bangladesh.

- Promotion of prerelease multiplication and demonstration of breeding lines and varieties at advanced stages of release to accelerate awareness among farmers and ensure a sufficient supply of breeder seed once a variety is released.
- Promotion of private-sector participation in seed systems to expand the seed supply.

Appreciating history and prehistory

I was fortunate to participate in the STRASA workshop on seeds in Dhaka. Engaging with the delegations from India and Bangladesh, I could not help but conclude that this process, while focused on seeds, is historic and is helping both countries in unexpected ways.

India and Bangladesh share a great deal of history. Bangladesh was part of India before the great partition that created East and West Pakistan in 1947. Bangladesh became a sovereign nation in 1971. But, through all that, the borders—first, administrative, and later, international—between India and Bangladesh have remained fuzzy and porous, with the two countries separate yet bound together by commonalities in heritage, blood, culture, religion, and agroecological conditions.

Indeed, if we go back in time much further into prehistory, recent advances in DNA analysis tell us that the origin of the rice plant is in the area now known as China, while we find the origins of humans in Africa. Through eons of evolution and migration, rice spread from China into South Asia and Southeast Asia. And, humans journeyed out of Africa to inhabit all but the most remote and inhospitable corners of the world.

Through many centuries of adaptation to a wide range of environments, many varieties of rice came into being. Similarly, humans evolved into different races, with divergent cultures, including diets and food preferences.

Thus, beginning with a few strains of rice emerging from a specific area of the globe, now there are at least 120,000 varieties of rice. Today, humankind, with IRRI in the lead, is extracting, nurturing, and creating new varieties that carry within them those traits that will enable rice to thrive even in the most inhospitable of agroclimatic environments. This, in essence, is the mission of the STRASA project.

Rice diplomacy

The discussions among the Indian and Bangladeshi officials responsible for seeds, informed and facilitated by IRRI, are accomplishing far more than just "harmonizing" seed-related procedures and regulations in India and Bangladesh. Perhaps more important and long-lasting is the mutual familiarity, friendship, trust, and confidence being built among these senior officials from opposite sides of a political border.

Serendipitously, the seed-focused discussions were taking place as the highest political leaders of Bangladesh and India were taking forthright steps toward improved relations and cooperation. In 2012, the minister of agriculture of Dhaka visited New Delhi to strengthen ties with her Indian counterpart. And, on the same day as the agricultural officials were meeting, the external affairs minister of India was also in Dhaka to promote discussions on the sharing of water between India and Bangladesh, and the clarification of the land border between the two nations.

There is great optimism that the germplasm-sharing workshops facilitated by STRASA will be successful. Indeed, the level and quality of participation in the Dhaka workshop were appropriate for substantive discussion and progress—just below the ceremonial and just above implementation—and therefore a focus on decision-making and successful rice diplomacy.

Dr. Tolentino is the deputy director general for communication and partnerships, and secretary to the IRRI Board of Trustees.

A shock wave from global cereal price spikes?

by **David Dawe**

R. PANALIGAN

Global price hikes of a staple food can affect prices in the local market. But, by how much?

Three major cereal price spikes hit world markets in the past few years, one in 2007-08, another in 2010-11, and the third in 2012. However, analysis in this article will focus on the first two price increases because more data are available for these two. During the first, world prices increased substantially for all three of the world's major cereals—rice, wheat, and maize. Prices for wheat and maize increased during the second although those for rice were stable. But, how much impact do these events on world markets have on food security and poverty?

Farmers and consumers do not interact with world markets directly—what they really care about is how prices move in their local market. An increase in domestic prices can hurt poor consumers. This reduces their purchasing power and impairs their nutritional status. A drop in prices can do the same to poor farmers, or at least those with a surplus to sell. And, frequent fluctuations in prices (price volatility) can hurt both farmers and consumers, can discourage investment, can encourage distress sales of assets, and may lead to political instability.

So, how much did prices in local markets increase during the past two world price spikes? A price index using data from 50 countries around the globe showed that domestic rice prices increased much less in 2008, the peak of the crisis, than world prices (Fig. 1). From a market point of view, it is clear that only a fraction of the movements in world prices is passed through to domestic markets. Similar patterns hold for wheat and maize as well.

Nevertheless, Figure 2 shows that changes in domestic prices track events on world markets reasonably well, only that transmission is partial. (Note that the domestic rice price index is the same in both Figures 1 and 2; only the axis scale is different.) The domestic price indices for rice, wheat, and maize increased sharply in the second half of 2007 and the first half of 2008, just as world prices did—only proportionately less. In

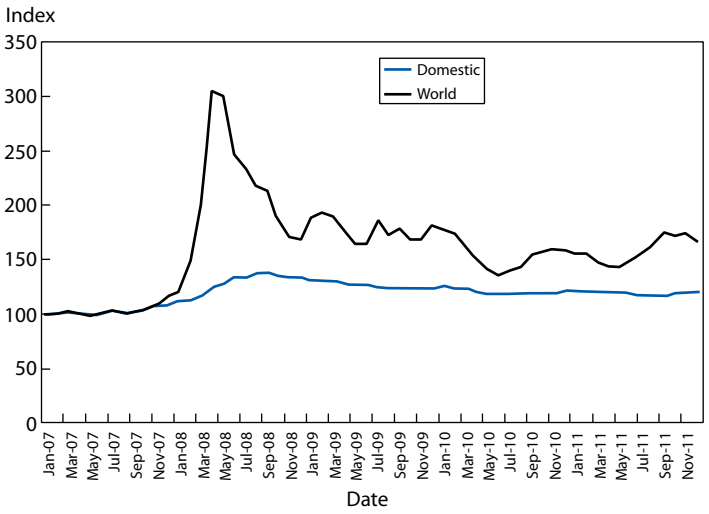


Fig. 1. Inflation-adjusted rice price index, January 2007 to December 2011.
Note: The domestic price is set equal to 100 in January 2007 for all countries, and the index value for subsequent months is equal to the average index value across all countries.
Source: FAO. 2012. GIEWS food price data and analysis tool. www.fao.org/giews/pricetool/.

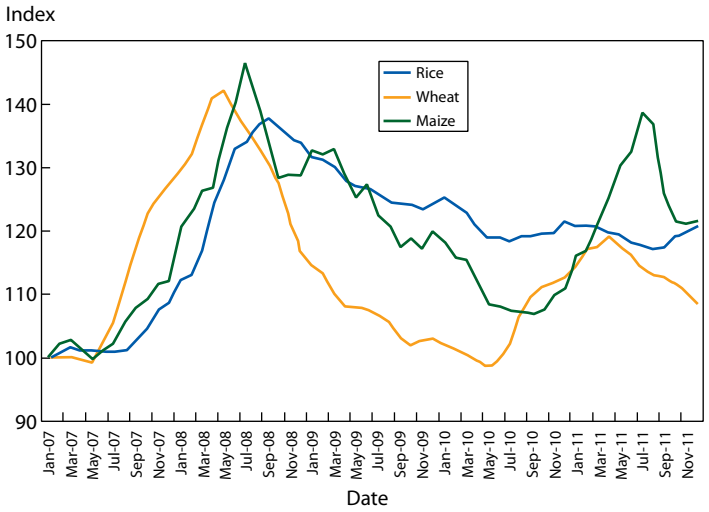


Fig 2. Domestic price index for rice, wheat, and maize, January 2007 to December 2011.
Note: The domestic price is set equal to 100 in January 2007 for all countries, and the index value for subsequent months is equal to the average index value across all countries.
Source: Same as in figure 1.

the second half, domestic prices also fell sharply, again mirroring the pattern in world prices. Finally, in the second half of 2010, domestic wheat and maize prices increased sharply while rice prices were stable. Again, the pattern is similar to that on world markets. It seems that, for many countries, domestic markets are connected to world markets.

Furthermore, even the fact that only a fraction of world price movements is actually transmitted to domestic markets does not mean that price fluctuations on world markets are irrelevant to the poor. Indeed, price increases on domestic markets for rice, wheat, and maize were substantial from a poverty and food security point of view. Prices typically reached a peak in early 2008 that was 40% higher than in January 2007, even after adjusting for inflation (Fig. 2). These peak prices were not sustained for an entire year, but domestic prices over the course of 2008 were still 25% higher than in 2007 for rice (again, after adjusting for inflation).

In many Asian countries, the poor often spend as much as 30% of their income on rice alone. Thus, a 25% price increase would lead to an approximate decline in real income by 7.5% for those who do not produce any rice (which includes all of the urban poor and many rural poor). This is a substantial shock for low-income families. This means that either they will reduce expenditures on rice or, if these are maintained, they will have less to spend on health care and education, or they will scrimp on other nutritious foods such as meat, dairy products, fruits, and vegetables. Unfortunately, these short-term coping strategies can permanently affect a person's physical health and mental capacity, especially if this leads to malnutrition in the first 1,000 days of life.

Figure 2 also shows that domestic staple food prices declined in 2009, thus providing relief to consumers. Nevertheless, by the end of 2011, prices were higher than they were before the 2007-08 crisis by 10% to 20%. (It is difficult to provide more current updates due to a lack of availability of underlying data.) These higher prices harm consumers and, in most cases, increase poverty in the short run. But, if the higher prices serve to mobilize domestic political support for long-term investment in agriculture, productivity can be increased. Eventually, this will contribute to economic growth and poverty alleviation in the longer term.

Thus, even if price transmission from world markets to domestic markets is often imperfect, sharp movements in world prices do get transmitted to domestic markets in many cases. The resulting increase in domestic prices is often substantial from a food security and poverty point of view—even if incomplete from a markets and trade point of view.

Dr. Dawe is a senior economist in the Agricultural Development Economics Division, Regional Office for Asia and the Pacific, of the Food and Agriculture Organization of the United Nations, Bangkok, Thailand.

Both politics and monsoons can affect the RICE MARKET

by **Samarendu Mohanty**

Global rice prices have been fairly stable since 2012 after a runup in the first half of 2011 in anticipation of the reintroduction of the Thai mortgage scheme that guarantees farmers a set price for their rice. This was followed by a subsequent drop in the fourth quarter of 2011 after India re-entered the nonbasmati export market, which made India the top rice exporter in 2012, thus dethroning Thailand for the first time in three decades (Fig. 1).

In the past few months, however, rice prices have come under pressure because of weak demand and the large stockpiles in key exporting countries. The strong harvest from the wet-season crop in Asia has helped to lower export quotations from Vietnam, Pakistan, and India (Fig. 2). But, Thai prices remain unruffled by the global situation mainly because of the mortgage scheme. This mortgage scheme has also created more uncertainty in the global market as traders do not know when mortgaged rice will be released and at what price.

For many Asian countries, including Vietnam, China, Bangladesh, and Pakistan, 2012 rice production is estimated to be at record levels. According to the USDA, overall global rice production for 2012-13 is estimated to be around 468 million tons (milled equivalent), 2 million tons higher than the record production of 2011-12. But, ending stocks for 2012-13 are projected to decline slightly from the 105 million tons in 2011-12 to 103 million tons because of strong growth in rice consumption. In the past 7

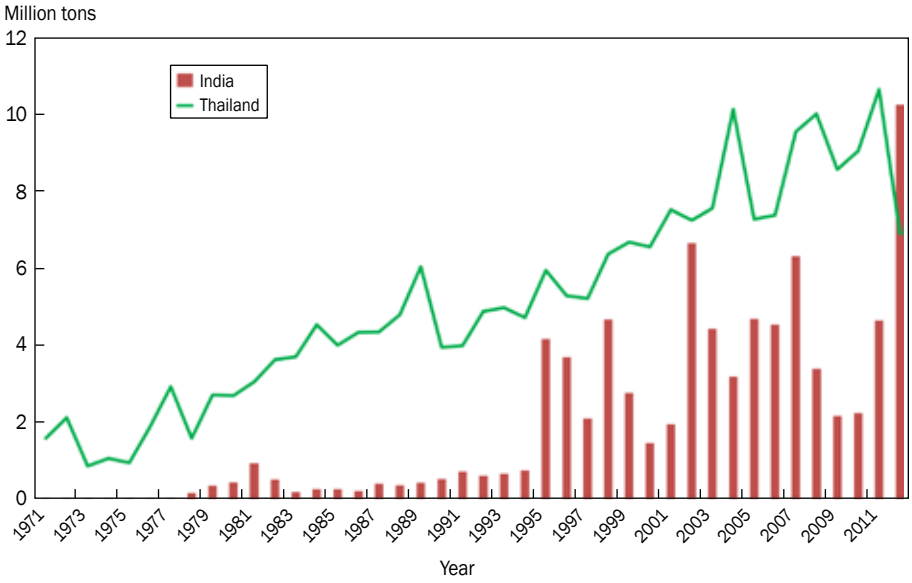


Fig. 1. The rise of India as the world's largest rice exporter.
Source: Production, Supply, and Distribution online database, USDA.

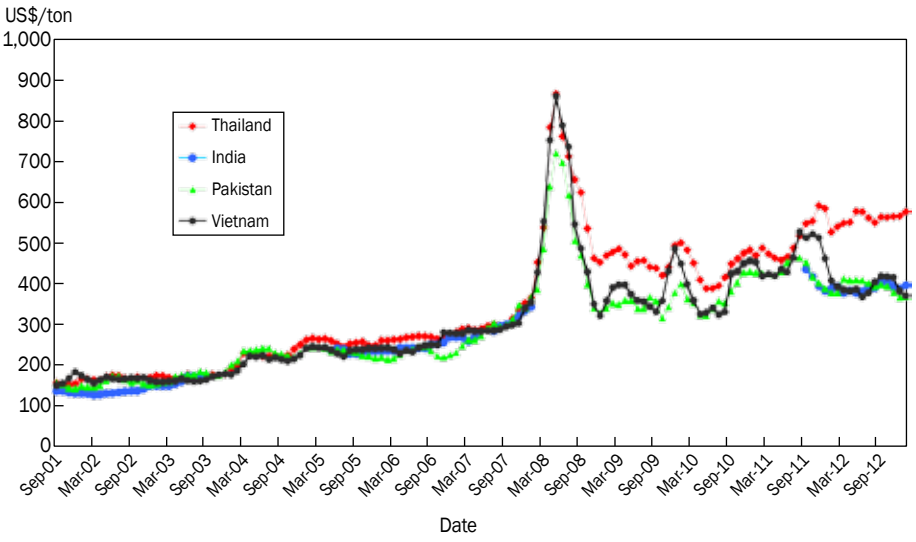


Fig. 2. Prices of 25% broken rice.
Source: FAO Rice Monitor.

Note: No data are available for India from February 2008 to August 2011 because of the export ban.

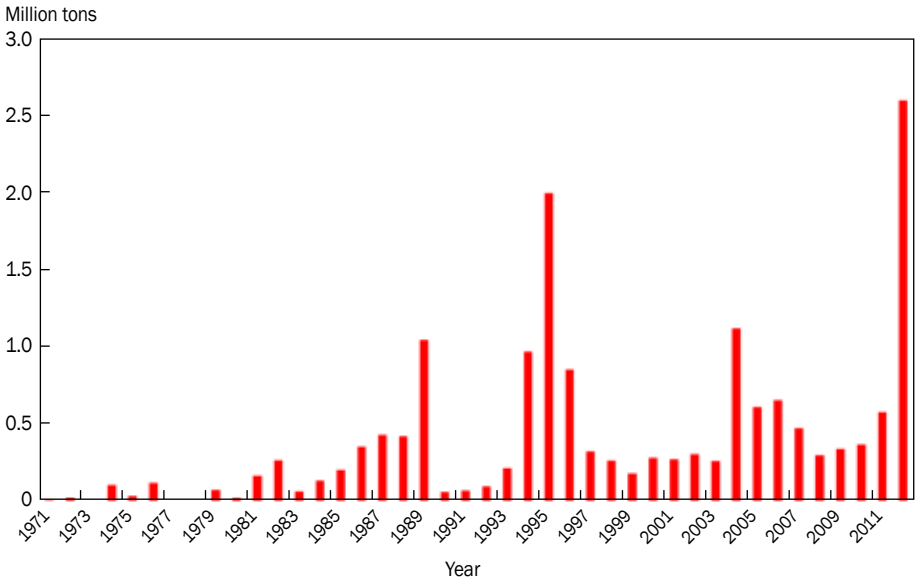


Fig. 3. Chinese rice imports.
Source: Production, Supply, and Distribution online database, USDA.

years, global rice consumption has increased by more than 50 million tons, with an average annual growth of nearly 2%. This has restricted the accumulation of stocks at a faster pace despite the good harvests in the past few years.

In 2012, global rice prices were largely supported by an unexpected source—China, which has emerged as the second-largest importer behind Nigeria, with 2.6 million tons of imports (Fig. 3). This is four times more than what China imported in 2011. Experts are split on the reason behind the recent rise in Chinese rice imports. Some believe that rising demand for rice by Chinese consumers has outstripped production growth, causing imports to rise. Others feel that the higher support price set by the Chinese government to bolster production is creating an incentive for local traders to import rice from Vietnam, India, and Pakistan. Whatever the reason, it is difficult to predict what China will do in the future. But, one thing is clear: the Chinese government is in a mood to bolster stockpiles and allow imported rice to enter the country to keep domestic prices in check.

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In addition to rice, China's corn (maize) imports also skyrocketed in 2012 to 5 million tons—a 500% rise from its 1 million tons of imports in 2011. Many believe that the time has come for China to relax its policy of 95% self-sufficiency in cereals similar to what they did with soybeans and cotton more than a decade ago. China now imports 60 million tons of soybeans and 25 million bales of cotton, accounting for 62% and 55% of the global market, respectively. It is difficult to visualize how the global rice market will transform itself if China decides to give up on rice self-sufficiency and emerge as a growing importer of rice. But, I believe that China is not ready to open up its food grain (rice and wheat) imports but may be leaning toward liberalizing corn imports in the near term to meet the rising demand from the poultry and pig sectors.

Short-term outlook

As we look ahead, rice prices are likely to be range-bound in the next few months, with plenty of rice for sale from India, Vietnam, Thailand, and Pakistan. The dry-season rice crop looks good in most countries, except India. The country's initial estimates by the Ministry of Agriculture suggest an 11% decline in rice area from 3.25 million hectares in 2012 to 2.9 million hectares this year because of shifting to oilseeds and pulses in some areas. But, this is unlikely to cause any problems as India's rice procurement stocks remain in excess of 30 million tons. This is more than twice what the government has prescribed as the desired buffer norm and strategic reserve.

However, India will be cautious of the volume of rice it exports in 2013 as it implements the provisions of the National Food Security Bill ahead of the general election in 2014. This bill plans to significantly expand the current food subsidy program to include more than half of India's billion-plus population.

Unlike India, Thailand is keen to offload part of its 15 million tons of mortgage stocks in the next few months to make room for new crops. Unfortunately, at this moment, Thai rice is not competitive in the market as the quoted prices are nearly 40% higher than rice with comparable quality from India and Vietnam. But, if the Thai government aggressively prices the mortgage stocks, then prices may decline in the near term. Even the continuation of China's imports is unlikely to provide much upward push on prices.

The monsoon holds the key to what will happen to rice prices in the second half of the year. The market is well positioned to handle isolated incidences of extreme weather. But, a bad monsoon (too much or too little rain) in the major rice-growing regions may spell doom for the market and push prices higher.

Dr. Mohanty is the head of the Social Sciences Division at the International Rice Research Institute.

The rice sector needs a SURVIVAL STRATEGY

BY OSAMU KOYAMA

In the middle of the 19th century, rice was the economic backbone of Japanese society. Hierarchical ranks of feudal lords were determined by the amount of rice produced in their respective territories. Even the annual salary for samurai warriors and administrators was paid in rice.

However, since the introduction of the Western diet to Japan, particularly through the school lunch aid program from the United States after World War II, rice has no longer been the sole staple food. Modern life required a change from traditional dietary habits to a fast-food diet. In 2012, the National Statistics Bureau announced that purchases of bread by urban dwellers surpassed purchases of rice for the first time.

The staple food crops of different regions change from time to time. In Europe, potatoes arrived from the New World in the 16th century and changed the European diet. In Africa, corn (maize) and cassava are now major staples, although these crops were not native to the continent. Therefore, the rise and fall of crops totally depend on whether the crops are competitive in the market, and, ultimately, on demand by the population.

Rice is currently a popular crop in some regions of the world. The per capita consumption of rice in Africa and North America has increased by more than 25% in the last 20 years. The price of rice is nearly twice that of wheat depending on quality. And, rice has been invading the traditional market for coarse grains in Africa.

In Asia, however, rice is becoming an "inferior" good. The per capita consumption of rice decreases as income increases in many Asian countries. A decline in rice demand may also decrease rice farmers' income and livelihoods in rice-producing areas. Globally speaking, this can be interpreted as a relative loss for rice-based economies in Asia, where the climate is highly suitable for rice production.

Thus, rice-producing areas should try to maintain or increase the value of rice, rice products, and its by-products—and eventually, the value of rice systems as a whole. The development of high-quality and high-value rice products is an important source of income that will bring prosperity. Unfortunately, neither companies nor governments are very keen on promoting the consumption of rice, unlike other agricultural products such as coffee, chocolate, and banana.

> The importance of rice, however, is not limited to its economic and nutritional value. We must also recognize the value of rice production in a social system.

In Japan, various efforts beyond the supply of tasty and shining rice grains are being made. The country has already begun research on new rice-based products such as rice noodles, pasta, bread, cookies, liquors, animal feed, medicines, and fuels. Moreover, a rice-based diet is being promoted as a healthy alternative and as a way to prevent some diseases.

The importance of rice, however, is not limited to its economic and nutritional value. We must also recognize the value of rice production in a social system in the context of "externality," which is a consequence of economic activities related to rice.

It is widely accepted that rice cultivation has environmental, cultural, social, and other functions. For example, paddy cultivation has sustained soil fertility for hundreds of years. This makes the value of its sustainability superb. Also, paddy fields often mitigate flood damage by storing water temporarily. Moreover, a collective practice for water management fosters the development of rural communities. Therefore, these intangible values, among many others, should be assessed and added to the total value of a rice production system. Now, tentative values have already been given to these various functions.

The rice community, consisting of producers, distributors, processors, researchers, and administrators, among others who benefit from rice, should have a common strategy to raise the relative value of rice and the rice sector in order to keep it as a major part of our life. It is wise to make efforts to "internalize," meaning to bring to light the invisible values attached to a rice system. Perhaps these values are equally as meaningful as the efforts to raise the records of yield per hectare for major rice varieties.

This is not a "selfish idea" of a person who is fascinated by the beauty of rice fields and the taste of rice dishes, but it is an objective view based on a scientific assessment of the rice economy.

Dr. Koyama is the director of the Research and Strategy Office at the Japan International Research Center for Agricultural Sciences.

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