Depositing seeds in community banks

Little machines making big waves in Africa

How much rice does the world waste?

Thailand and the global rice market

African deities and rice
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Farm and Trade Inc. is an international buyer and seller of rice with a vested interest in uniting sustainable cultivation and research techniques with ethical trade decisions. By combining world class analysis from all corners of the industry, Farm and Trade Inc. is the world’s premier broker of rice.

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Partners in growth

Rice Today is starting its 11th year of publishing compelling stories on rice. In what direction will the magazine move in the next decade?

So much has changed since its first publication in 2002, when Rice Today began by featuring research results mostly from the International Rice Research Institute and usually emphasizing Asia. In the last 3 years, it has slowly evolved toward being a global magazine on rice. Its stories come from IRRI and from institutions such as the Africa Rice Center and International Center for Tropical Agriculture, agricultural universities, and other organizations from both the public and private sector around the world. Now, more and more updates and information come from not only Asia but also Africa, Latin America, and North America.

To map our way toward growth and make Rice Today truly global, one of our plans is to expand our network of partners who can also guide us in the right direction. Indeed, when more people work together, getting to a destination can be more effective. Hence, the formation of the magazine’s editorial board. In May 2012, the board holds its inaugural meeting in conjunction with the Americas Rice Conference (in Miami) hosted by the magazine’s publisher, The Rice Trader.

The board will assist the magazine in achieving its goals: to highlight the impact of rice research in reducing poverty, improving global food security, and tackling environmental problems; to focus on rice production in underdeveloped and developing countries in Asia, South America, and Africa; and to share the latest updates and advances in rice research and its development, extension, and adoption across the entire rice industry—farmers, farm suppliers, extension providers from the public and private sector, postharvest processors, traders, and consumers.

Since the editorial board will serve as a think tank for story ideas for the magazine that best capture the world of rice in ways that will be of interest to readers, the board includes some outstanding representatives from different areas of rice science and industry, and rice-producing regions. We would like to thank all the members of the board in anticipation of their great ideas and contributions that we hope will build on the foundation of Rice Today. (See members of the board on the next page.)

This move is timely and fitting as Rice Today will also serve as the flagship publication of the Global Rice Science Partnership (GRISP), a strategic work plan for global rice research. With this role, we are positive that Rice Today will be able to contribute more to sharing the ideas needed that will benefit all those who have a stake in rice science and development. The publication does this by publishing compelling stories and learned opinion pieces, some of which can inspire growth and progress in the world of rice.

In this issue, our cover story tackles how farmers in southern Philippines learned to increase their supply of good-quality, culturally important seeds through community seed banks. Another success story is that of a mechanical thresher that has become popular in Africa because of its capacity to eradicate back-breaking manual labor on farms. For a more comprehensive take on rice-farming mechanization, we examine the question: What does it take to introduce farm machines in a sustainable way?

On rice consumption, we investigate how much rice the world wastes—in the end, we encourage responsible consumption to help overcome food scarcity. We analyze the perennial problems of rice supply and demand through USDA’s eight economic factors that will dominate global agriculture in the next 10 years. In the same economic thread, a senior analyst from Nanyang Technological University in Singapore discusses the move toward rice self-sufficiency in Indonesia and the Philippines (Grain of Truth). Finally, our Rice Facts column scrutinizes Thailand’s rice pledging scheme and its impact on world rice trade.

On the lighter, but no less significant, side, we have our mainstay What’s cooking? (Panfried glutinous rice) and an article on culture called Rice of deities, featuring a function of rice other than consumption—rice as an offering to African gods and goddesses. Finally, to set an example on how partnerships can move us closer to achievements, we highlight Japan (which has supported rice research for decades); and also feature partnerships that aim to raise upland farmers’ incomes.

With new partners from around the world, the next decade of publishing rice stories—in a time of increasing global challenges—may be less daunting.

Lanie Reyes and Aileen Macalintal
Rice Today editors
Rice research has a major documented impact in Southeast (SE) Asia compared with other agricultural research investments, according to a report published in *Agricultural Systems*.

It showed that around 90% of total documented benefits of agricultural research over the last 5 decades in SE Asia were due to rice research.

Most of the US$33.5 billion of rice research benefits were due to the development and release of new and improved rice varieties. This supports another report from 2011 by the Australian Centre for International Agricultural Research that showed SE Asian rice farmers harvesting an extra $1.46 billion worth of rice a year as a result of rice breeding.

**Ninety percent of total documented benefits of agricultural research over the last 5 decades in SE Asia were due to rice research.**

Associate Professor Mywish Maredia at Michigan State University, the lead author of the report, said, “The analysis offers compelling evidence that past investments in agricultural research in the region have been productive. The large share of rice research in total documented impacts shows that there is considerably more certainty about the ability of rice research, particularly genetic improvement, to generate impact in SE Asia than is the case for other research.”

The Asian Development Bank (ADB) supported the research to identify the key agricultural R&D activities that could most effectively help deliver food security in SE Asia.

“Continued research on rice is an imperative agenda for Asian agricultural R&D as rice is and will be a major staple food in Asia and the Pacific region,” said Dr. Lourdes S. Adriano from ADB.

Report co-author David Raitzer from IRRI added, “In relation to the impact documented, rice research across both national and international agricultural research systems in SE Asia is underinvested.”

Benefits from other areas of research such as improved crop management strategies that improve water or fertilizer use are harder to quantify but are likely to be delivering additional impacts to both productivity and the environment. Almost certainly, other impacts beyond rice research remain undocumented. However, in the absence of systematic assessment, their magnitude is uncertain compared with rice research.

Raitzer is now leading an interdisciplinary team of scientists at IRRI to assess the impact of different areas of rice research on poor communities across Asia.

These findings will then be used to help target rice research investment to help ensure it has the biggest impact possible to help lift Asian rice farmers and consumers out of poverty.

See YouTube video on the impact of rice research at http://youtu.be/FUBeeY1RhT0

“Continued research on rice is an imperative agenda for Asian agricultural research and development as rice is and will be a major staple food in Asia and the Pacific region.”

-Dr. Lourdes S. Adriano, ADB
**Queen Elizabeth II recognizes former IRRI scientists**

Dr. John Sheehy, IRRI’s former leader of the C₄ Rice Project, and Dr. Michael Jackson, former head of the International Rice Genebank and director for program planning and communications, were on the 2012 Honors List of Queen Elizabeth II. They received their medals as Officers of the Order of the British Empire (OBE) in a formal investiture held at Buckingham Palace in February 2012.

**Nutrient advice now on smartphones**

Since its debut in the Philippines in 2011, Nutrient Manager for Rice Mobile—designed to give fertilizer guidelines to rice farmers via their mobile phones—is now available via smartphones with Android operating systems.

By using NMRiceApp on their smartphones, extension officers can visit farmers, interview them, and store information on their smartphones. Once a smartphone is connected to the Internet, the extension officer can process the fertilizer recommendation for the farmers and send it to them via text messages.

**Rice next to get salt-tolerance gene?**

A team of Australian scientists from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and University of Adelaide have successfully introduced a salt-tolerance gene into durum wheat, used for pasta and couscous, which could be planted by farmers in 5 years.

Dr. Matthew Gillham, from the university’s Waite Research Institute, said the gene could also be used in other varieties of wheat and other crops such as barley, oats, and rice.

The team used nongenetically modified breeding techniques to incorporate the gene.

Source: www.news.com.au

**China’s Father of hybrid rice wins Mahathir Science Award**

Popularly known as the father of hybrid rice, Professor Yuan Long Ping won the Mahathir Science Award 2011.

The Award is bestowed on any scientist, institution, or organization worldwide in recognition of contributions and innovations toward solving problems of the tropics through science and technology.

Initiated by the Academy of Science Malaysia in 2004, the Award is now managed by the Mahathir Science Award Foundation.


**U.S. rice farmers fund research**

Rice farmers in the U.S. state of Louisiana have agreed to continue paying 5 cents for every 100 pounds (about 45 kg) of rice produced for research.

“I can assure farmers that they are getting their money’s worth,” said Steve Linscombe, Louisiana State University AgCenter director. “A continuation of these checkoff funds means that research can continue to develop new varieties and to improve rice farming practices.”

Source: http://deltafarmpress.com
**Adoption and diffusion of modern rice varieties in Bangladesh and eastern India**
Edited by M. Hossain, W.M.H. Jaim, T.R. Paris, and B. Hardy

This book tackles the diversity, spatial distribution, and adoption of modern rice varieties in Bangladesh and three neighboring states of India (West Bengal, Orissa, and Jharkhand). It includes the nutritional implications of consumer preferences as well as milling and cooking practices in these areas, plus an assessment of the potential of biofortification in addressing the problem of micronutrient malnutrition in rice-based cropping systems in South and Southeast Asia. This publication is a result of a research study pioneered by the International Rice Research Institute (IRRI) and the International Food Policy Research Institute (IFPRI) under the HarvestPlus project of the International Center for Tropical Agriculture (CIAT).

**Sowing the seeds of rice science: achievements and future directions for training at IRRI**
By Imelda R. Molina, Gelia T. Castillo, Randolph Barker, Pamela Castanar, and Noel Magor

This publication gives an overview of training at IRRI and its impact on rice scientists and extension workers across Asia in almost 50 years. This book includes a database of IRRI training programs and participants from 1962 to 2010 and IRRI’s future plans for training and capacity strengthening of national agricultural research and extension systems.

**Handbook on rice policy for Asia**
By Annette Tobias, Imelda Molina, Harold Glenn Valera, Khondker Abdul Mottaleb, and Samarendra Mohanty

The rice sector has been subject to a number of policy interventions because of its strategic and political importance. This publication aims to explain the current policy structure in the major rice-producing and -consuming countries in Asia.

**Patterns of adoption of improved rice varieties and farm-level impacts in stress-prone rainfed areas in South Asia**
Edited by S. Pandey, D. Gauchan, M. Malabayabas, M. Bool-Emerick, and B. Hardy

This publication presents the patterns of adoption of improved rice varieties and their impact on farming households in the stress-prone rice-growing areas of Bangladesh, India, and Nepal.

**SELECTED TRAINING COURSES AT IRRI**

<table>
<thead>
<tr>
<th>Course title</th>
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<tr>
<td>Project management</td>
<td>14-18 May</td>
<td>Dhaka, Bangladesh</td>
<td>Early career scientists, postdoctoral fellows, or senior managers</td>
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<tr>
<td>Projects in controlled environments 2 (PRINCE2)</td>
<td>29 May-1 June</td>
<td>IRRI, Philippines</td>
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<td>Advanced indica transformation course</td>
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For the complete list and information about the 2012 IRRI Training Courses, visit http://snipurl.com/training_courses_2012.
For inquiries, email IRRIPTraining@cgiar.org, call (63-2) 580-5600 ext. 2538/2824/2437/2324, or send a fax to (63-2) 580-5699, 891-1292, 845-0606.
GRAND ROYALTY. Dr. Michael Jackson, former IRRI scientist who was recently awarded the royal Order of the British Empire, stands before the Grand Canyon, Arizona, USA, wearing his Rice Today shirt.

STONES AND MILESTONE. Dr. Jill Lenné, an IRRI Board of Trustees member, holds two issues of Rice Today—one of which has the cover of covers that celebrate a milestone for the magazine: 10th year anniversary. This photo was taken at the Loanhead of Daviot recumbent stone circle in Aberdeenshire, Scotland. These stone circles were constructed over 4,000 years ago by farming communities, and served as lunar calendars, showing the passing seasons by the way the parts of the circle framed the moon.

SCIENCE LOVE, once upon a time in Mexico. Husband and wife Jun and Teri Ulat—both IRRI associate scientists—look set for an archaeological adventure with Rice Today issues in hand. The photo was taken at the Pirámides in Teotihuacán, Mexico, a UNESCO World Heritage site, where pyramidal structures were said to have existed since 100 BC.
Calm and smiling, he spoke with authority, and the interviewer from Televisi Republik Indonesia (TVRI) kept probing him for more. He talked about alternate wetting and drying, a water-saving practice, and the Nutrient Manager, both technologies developed by the Irrigated Rice Research Consortium (IRRC) at the International Rice Research Institute. The next morning, he was interviewed again by TVRI, this time, about maize, at the Assessment Institute for Agricultural Technology (AIAT) office of South Sulawesi in the town of Maros. Professor Djafar Baco is the go-to-guy when it comes to maize and rice production in South Sulawesi.

Prof. Baco was born and raised in Bone District, South Sulawesi, in a small village called Dusun Salokaraja, where only eight houses used to
Banking seeds

Farmers have more access to good-quality seeds through community seed banks

In Arakan Valley, the upland “rice belt” of North Cotabato, Philippines, farmers hold dear a rice variety—Dinorado, a native upland rice characterized by its pinkish grain, sweet aroma, and good eating quality. For the Arakeños, Dinorado has been part of their community as far as they can remember. Long ago, the Arakan Valley was home to exotic Dinorado rice. So much so that Dinorado has become part of their pride and social identity.

Dinorado is a “special” rice that is sought for weddings, birthdays, and fiestas, among other occasions, and it is a status symbol in the country. Its price is 50% higher than ordinary rice. Unfortunately, the quality of Arakan Dinorado diminished as the genetic purity of its seed stocks declined.1

To preserve the purity of the seeds, farmers must know how to manage the health of their seeds—and this lack in management was found in the farm communities in an initial needs assessment of the Consortium for Unfavorable Rice Environments (CURE) of the International Rice Research Institute (IRRI).

Also, most of these farmers lack access to higher-yielding modern varieties. Traditional varieties tend to have a lower yield (an average of 1.6 tons per hectare). Thus, 4–6 months of hunger is a common experience among farmers who cultivate traditional varieties. During these months of hunger, farmers and their family sometimes eat the seeds set aside for the next cropping season.

Another problem is that upland rice farming, which is mostly rainfed, is at the mercy of the weather. “For this same reason, seed producers do not usually lend seeds to upland farmers; even local moneylenders are less likely to invest in farming that is deemed high risk,” related Dr. Rosa Fe Hondrade, a social scientist at the University of Southern Mindanao (USM).

These are some of the challenges that CURE aimed to tackle in Arakan. In a team effort, the CURE scientists at IRRI joined forces with USM, the Philippine Rice Research Institute, the Municipal Agricultural Office of Arakan, and the Department of Agriculture. They call themselves the “Arakan Valley team.”

Seeds of survival
The Arakan Valley team understands the value of seeds to farmers. Farmers depend on viable seeds for the survival of their households; when seeds are scarce, so is food security. To avoid this problem, the team set its sights on improving seed health and quality management practices of the farmers and making modern varieties along with other traditional varieties available to them.

So, they mobilized a group of farmers who were willing to be trained on how to properly produce good-quality seeds and to know about modern rice varieties suitable in their area. This group of farmers evolved into a local network called the “community seed bank.”

Benefits to the farmers
Through the community seed bank, “We learned how to produce quality seeds such as getting rid of unwanted

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Economic progress became evident with some changes in the Valley: some nipa huts became houses of stones; the usual sight of horses tied to a tree became pickup trucks and utility vehicles; plus, some signs of development here and there—a gasoline station, a grocery store, and a hospital.

With rubber sap priced at almost US$1 (40 pesos) per kilogram, a farmer can earn as much as $2,300 (more than 100,000 pesos) from a hectare of a 6-year-old rubber plantation. As the trees mature, this gives more income to farmers. And, farmers can sustain this potential income until the trees reach 25 years old.

But what has become of the upland rice farmers in Arakan Valley? Are they a case of poverty caught in the midst of progress?

Those farmers who converted their rice areas into rubber plantations earlier are reaping the benefits of their investments, whereas some others still need to wait for a year or two before they start to tap their rubber trees.

Surprisingly, despite the popularity and the potential income from rubber plantations, the Arakan farmers did not stop cultivating rice. For them, nothing beats the security of having some rice saved for their consumption. For this reason, ACSBO continues to be relevant even with this change in the community.

In fact, “ACSBO is so successful that it has become a model in nearby towns,” said Dr. Edwin Hondrade.

The more, the better
Crop diversification is also promoted in Arakan. “We always encourage farmers to grow different rice varieties as well as crops,” said Dr. Edwin Hondrade. “A kind of insurance in case one variety or crop fails.”

This strategy was proven helpful in 2011 when most of the rice crops in Arakan failed because of rat and pest infestations. Because many kinds of rice varieties were sown, some varieties survived. It can be noted that most farmers mentioned modern variety UPL Ri5 as having survived.

“UPL Ri5 has been preferred by both growers and local rice traders for almost two decades since it was introduced by the USM team,” said Dr. Rosa Fe Hondrade.

Seed banking with a twist
The Arakan farmers often cultivate Dinorado as a cash crop, but the well-off farmers, on the other hand, grow Dinorado for their food. Among Arakeños, “no other rice can compete with its taste.”

Under the leadership of municipal agricultural officer Edgar Araña, Dinorado, Arakan’s priority product, is listed under the “one town, one product” program of the national government. That is why knowledge of good seed health practices is of great value for the Arakan community.

Moreover, the community seed bank model has been embraced by the local government unit of Arakan, but with a twist. It applies the principles and practices of a community seed bank to develop and preserve its exotic Dinorado variety, and it promotes organic farming.

“Applying organic amendment to the Arakan Dinorado brand further increases its value,” Mr. Araña said. “It can be sold for up to 80 pesos (almost $2) per kilogram.” This is more than double the price of standard types of rice in the Philippines.

For Mr. Araña, the local government unit is not only...
Most organizations working toward sustainable development believe that giving people money does not get rid of poverty. Instead of giving “doles,” empowering people and communities to take control of their situations has been deemed a more sustainable approach.

In the Philippines, the second phase of the Cordillera Highland Agricultural Resource Management Project (CHARMP2) works to reduce poverty and improve the quality of life of rural communities in the highlands of the Cordillera Administrative Region (CAR). The CHARMP2 project, an International Fund for Agricultural Development (IFAD) investment within the Department of Agriculture (DA), provides interventions such as community mobilization, watershed conservation, agriculture and agribusiness development, the promotion of income-generating activities, and the development of rural infrastructure.

Recently, CHARMP2 forged a partnership with the Consortium for Unfavorable Rice Environments (CURE), which is coordinated by the International Rice Research Institute (IRRI). Through this, CHARMP2’s development interventions will hopefully be strengthened with the support of CURE. In turn, the partnership will enable CURE to introduce and extend technological options over a wider area.

**Threatened heirlooms**

Under CHARMP2, three remote upland villages—Bagtayan in Pasil, Kalinga; Fiangtin in Barlig, Mountain Province; and Bangbang in Hungduan, Ifugao—are the focus of the collaboration with CURE. These villages were selected because they have existing activities that are in line with CURE’s goal, which is to empower local rice growers to reduce poverty. Also, they have strong local government unit support, connection to rice markets, and a well-prepared village participatory investment plan that matches the needs and development priorities of stakeholders with local resources/budget.

Farmers in these villages grow traditional rice varieties that their ancestors have cultivated for hundreds of years. In Bagtayan, heirloom rice varieties are classified according to the season when they were grown—dry season (Unoy) or wet season (Uyak) and whether they are glutinous (Aig, Lachok, and Yonga) or nonglutinous (Chong-ak, Chumalling, Ifuwan, Finuga, Chiplog, and Ginonaw).

In Fiangtin, farmers grow the rice variety Mountain Violet (or Ominio), which is named after its color. This variety has been recently recognized as a “heritage food” in danger of extinction by the International Ark of Taste, which seeks products from all around the planet at risk of extinction but that can be rediscovered and be returned to the market.
Sensing cash through maps

Named after the twin river systems, the Indus and the Ganges, the Indo-Gangetic Plain (IGP) is South Asia’s major food-producing region that comprises parts of Pakistan, Nepal, India, and Bangladesh (Fig. 1). More than one billion people—one-seventh of the world’s population—live in the IGP.

With the ever-increasing population as the backdrop, the major challenges in the IGP are to satisfy the food demand of the people who live there and improve their livelihoods and to preserve its natural resource base.

Large tracts of land in the middle and lower Gangetic Plains are either uncultivated or underused after the rice harvest during the kharif (wet) season, including rice-fallows (under 6.7 million ha), flood-prone riversides (or diara lands, 2.4 million ha), waterlogged areas (4.9 million ha), and salt-affected soils (2.3 million ha).

Improved resource-conserving technologies, such as zero-tillage, can give farmers in these areas new ways to grow rice and wheat that increase productivity and profitability as well as input efficiency. But, different resource-conserving technologies suit different areas and it is not a case of one technology fits all.

To make sure the right resource-conserving technology is delivered to the right area, it helps to know first the extent and distribution of these “problematic” lands (salt-affected soil or waterlogged areas). The International Rice Research Institute (IRRI) has done this by obtaining spatial information at the field or village level from high-resolution remote-sensing data. Once a problem in an area is identified, the technology that is most effective in overcoming the problem can be promoted and shared with local farmers.

Studies conducted by IRRI and the International Maize and Wheat Improvement Center (CIMMYT) in the IGP show that remote sensing-based technology targeting (Fig. 2) can bring immediate impact and can provide more income to farmers. For example, farmers stand to gain a potential income increase of US$63 per hectare by targeting raised beds in salt-affected soils; $250 per hectare by introducing submergence-tolerant rice varieties (e.g., Swarna-Sub1 varieties); $800 per hectare by introducing boro rice (November-April) in waterlogged areas; and $581 per hectare by introducing zero-till when growing lentil in rainfed fallow lowlands.

Farmers can earn $147 per hectare by timely planting zero-tillage wheat. They could earn an additional $180 per hectare by growing a short-duration mungbean crop after the harvest of drill-seeded zero-till wheat.

Remote sensing-based technology targeting has an enormous potential to increase the efficiency of technology transfer and impact assessment. The methodology is already proven and can be applied to more than 15 million hectares of underused IGP lands. If precisely applied, all this can add an income
That rice you throw

A family of five cooks a kilogram of rice in a pot for breakfast. Somebody forgets about it and it burns—the rice at the bottom of the pot becomes almost inedible. The kids don’t finish their meals. Leftover rice is all over their plates and in the pot, which will sit in the kitchen for hours. At the end of the day, the family throws away a plastic bag full of burned and spoiled rice. This is how a family as well as many households and restaurants in the Philippines waste this high-demand political commodity, which feeds half of the world’s population.

At first, this fact may not sit well with the Philippines’ annual per capita consumption of 120 kilograms, or about 5 cups, of rice per day. Why buy that much rice for the table when a significant amount is thrown away, taking with it all the nutrients and energy that rice can give? National Food Authority Administrator Angelito Banayo has a term for this behavior—takaw-tingin (literally, takaw pertains to gluttony, tingin means sight; the concept refers to impulse buying or acquiring at the sight of things desirable). But, what seems to be wrong with a few grains of rice left on the plate or in the pot? The devil is in the details.

Throwing it away

Research shows that the Philippines, the world’s biggest rice importer for several years, wastes rice that is worth at least US$335,000 (23 million pesos) every day, or at least $223 million a year—enough to feed 4.3 million people. The Food and Nutrition Research Institute (FNRI), under the Department of Science and Technology, revealed these 2008 data, further noting that every Filipino wastes an average of 3 tablespoons (9 grams) of rice daily, which is equivalent to 3.3 kilograms per year.

With 94 million people (National Statistics Office 2010) and 9 grams of wasted rice per day (FNRI 2008), the total wastage is 308,000 tons: 36% of the 2011 rice imports.

Wasted grams per head actually vary in different regions across the Philippines. FNRI’s National Nutrition Survey shows that on one of the three island groups of the Philippines, Luzon, daily rice and product wastage is 16 grams per capita and 12 grams each for the other two, Visayas and Mindanao. Also, middle-class families tend to waste more than low-income families. Apparently, the more people have, the more they waste.

If the Philippine figures cause deep concern, global figures for “throwaways,” plus postharvest losses, can be alarming.

Chain of waste

A Food and Agriculture Organization (FAO) study, “2011 Global food losses and food waste,” revealed that a third of global food (1 billion tons) is wasted. Part of this is cereals (including rice). Losses in rice come from the unmilled grains through poor harvesting and postharvest activities, inefficient transportation, inadequate storage, wasteful processing, and market spoilage.

The first rice wastage happens after harvesting. Cited in the report, losses during agricultural production happen when rice grains spill and degrade during handling, storage, and transportation between the farm and distribution to markets (wholesale, retail, supermarket, and wet markets).
It takes sound business principles and planning to introduce farm equipment in a sustainable way

A farmer’s life has never been an easy one. Before farmers can reap the full benefit of their harvest, they have to do many energy-sapping tasks: plowing, planting, irrigating, weeding, harvesting, threshing, transporting, and storing.

Traditionally, most activities on small rice farms require long hours of work, using a lot of family labor or energy. Studies show that, for each ton of rice produced, more than 7,000 megajoules of energy are needed, whether provided by humans or machines.

In physical terms, work or energy is a function of force and distance. The more force you need to apply or distance you need to travel, the more energy is required. The faster you accomplish this, the more power you exert. When humans or animals work in the field, the problem is that they can supply only a finite amount of energy at a given time. When they get tired, efficiency drops and so does the quality of work.

Are machines the answer? Although humans and animals have limited energy over time, machines don’t get tired, and they can get the job done much faster without sacrificing quality of work.

For instance, to plow a hectare requires 150 person-days to finish, 12 days when animals are used, a day with a 2-wheel tractor, and 1–2 hours with a 4-wheel tractor. The same amount of energy of about 1,500 megajoules is required to do the job. The difference is in the time.

Aside from time, labor cost should also be considered. Using a machine or hiring a contract service provider is cheaper. The cost for one-pass plowing using animals, a 2-wheel tractor, or a 4-wheel tractor is US$40–50 per hectare depending on the locality while manual labor costs more than $200 per hectare, and the job done is no better than the mechanical output anyway.

In terms of harvesting, hand harvesting and threshing cost $100–120 per hectare and hand cutting with mechanical threshing costs about $80 per hectare, which is similar to combine harvesting that costs $80–100 per hectare.

When a machine is introduced into a farming system, it often brings with it other benefits. The engine can be used as a power source for other machines such as threshers, water pumps, and electricity generators. Moreover, a farmer who owns a machine such as a 2-wheel tractor or a thresher can do contract service work for other farmers.

Technical loopholes
Good management and understanding of the machine and the farming environment are all critical and should not be overlooked. For example, when mechanical threshers were brought to Mozambique from Asia, all had broken down with mechanical problems within 2 months. The cause of the problem was that farmers had always cut the straws long enough for easy grip when they manually flailed them over a drum to release the grain. However, mechanical threshers require short straws to be efficient.

Another problem encountered was that the farmers normally left their rice crop in the field until the moisture dropped to 15–16%, which made it easier for threshing. The mechanical threshers, however, were
Africa shifts from back-breaking operations to almost labor-free threshing

The excitement of rice farmers in Saint-Louis, Senegal, upon seeing an appropriate engine-driven small-scale thresher from Asia in the mid-1990s could not have been far different from that of the first American president, George Washington, in 1796, when he was expecting the first horse-powered threshing machine to arrive from London. He described the new machine as one of “the most valuable institutions in this country; for nothing is more wanting and to be wished for on our farms.”

The Asian rice thresher, which the Senegalese rice farmers appreciated, was sent by the International Rice Research Institute (IRRI) upon request by the Africa Rice Center (AfricaRice). It was expected that this thresher could be locally manufactured and mounted to serve as an alternative to manual threshing.

The making of ASI

Thanks to an innovative partnership forged between national and international research and extension organizations, local artisans, farmers’ organizations, and the private sector, an improved rice thresher for the Senegal River Valley (the principal zone for irrigated rice in the country) was soon developed. Based on the IRRI prototype, it can reduce the drudgery associated with hand threshing and improve yield and marketability of rice.

Substantial modifications were made to the original thresher, including doubling its capacity, making it more robust by using sturdier material, increasing its processing power, and adding two wheels to make it a four-wheel version.

Named “ASI” after the three main partners—AfricaRice, the Senegal River Valley National Development Agency (SAED), and the Senegalese Institute of Agricultural Research (ISRA)—the thresher went through several adaptations to ensure that it met the requirements of producers and women rice farmers engaged in threshing activities.

ASI was commercially released in Senegal in 1997. Since then, ASI has become the most widely adopted thresher in Senegal, with major impact on the rice production chain.

A study showed that, with six workers, ASI yields six tons of paddy per day vis-à-vis one ton by manual threshing and four tons by Votex, the alternative small-scale thresher that was available in the Senegal River Valley. Moreover, with a grain-straw separation rate of 99%, no additional labor is required for sifting and winnowing compared to Votex, which could not properly separate grains from straw after threshing.

In other words, it reduces labor requirements, freeing up family members, particularly women, for other useful tasks; speeds up the postharvest process; allows production of a higher quality product with lower risk of damage; and increases the marketability of local rice in the face of imports.

Recognizing its immense value for the country as a technical solution that is acceptable to everyone in the rice-growing community, including women, the Grand Prix du Président de la République du Sénégal pour les Sciences (Special Prize of the President of Senegal for Scientific Research) was conferred in 2003 on the ASI thresher team. The team included AfricaRice Deputy Director General Marco Wopereis, who had served as an agronomist in the Saint-Louis Station of AfricaRice in the ’90s and was closely involved in all the stages of ASI’s development.

An impact study conducted by AfricaRice in Senegal 12 years later...
Three thousand years ago, African rice (Oryza glaberrima) was first domesticated in central Niger in West Africa and then spread to the rest of the continent. For thousands of years, it sustained the economies of many precolonial African kingdoms in West and Central Africa. But, African rice has been overshadowed by its Asian relative, particularly since the early 20th century.

The decline of O. glaberrima began after the First World War, when colonial powers occupying West Africa promoted only Asian rice cultivars. Asia’s varieties went through seed multiplication and distribution projects that mainly catered to the colonizers’ commercial interests. The decline of O. glaberrima continued after the Second World War.

Old rice in a new world

African rice was initially ignored by mainstream research, said Dr. Koichi Futakuchi, ecophysiologist at the Africa Rice Center (AfricaRice). Historically, researchers were interested only in passing on beneficial traits, such as resistance to pests and diseases, from African rice to Asian rice. Recently, however, the world has “rediscovered” African rice and more researchers are working on improving African rice by introducing genes from Asian rice.

Although it is prone to lodging, has lower yields, is harder to mill, and has panicles that scatter the seed at maturity, African rice is known for its toughness.

Its larger leaf area makes it more efficient at shading out weeds. African rice is also more tolerant of severe climates, drought, flood, iron toxicity, infertile soils, and human neglect (see Beware of bronzing on pages 38-39 of Rice Today Vol. 10, No. 3).

African rice was crossed with Asian rice in the 1990s to create NERICA (NEw RICe for Africa) varieties that can have both O. glaberrima’s adaptability to indigenous environments and O. sativa’s high yield potential. NERICA proved to be widely successful. Several upland NERICA varieties are already available as well as lowland ones that are adapted for both rainfed and irrigated lowlands.

NERICA, however, does not signal the end of pure African rice. New findings presented by AfricaRice scientists and their partners during the 2010 Africa Rice Congress sparked renewed interest in O. glaberrima (see Pockets of Gold on pages 32-33 of Rice Today Vol. 9, No. 2). Scientists at AfricaRice believe that improved, high-yielding O. glaberrima varieties, armed against Africa’s multiple abiotic and biotic stresses, have tremendous potential and can play a vital role in the region’s food security.

Divine offering

African rice is also important in the spiritual realm of some African people. In fact, its value in sacred rituals saved African rice from the onslaught of Asian rice in pockets of small communities, such as the Jola (or Diola) people in southern Senegal, according to Olga Linares, staff scientist emeritus at the Smithsonian Tropical Research Institute in Panama. The Jola engage in large-scale rice cultivation and agrarian activities, and measure a person’s wealth by the amount of rice owned.

Those who have not converted to Islam continue to practice awasena, their traditional religion, and worship the supreme deity Emitai, Dr. Linares noted in her book Africa rice: history and future potential. The Jola believe that Emitai, the creator of all life and the bringer of rain that sustains them, gave O. glaberrima (also called Diola rice) to their ancestors. As such, it possessed a life-giving power that explained the origins of the land. To preserve the link to their ancestors and to the rain god, the Jola make sure that varieties of O. glaberrima are always planted.
Panfried glutinous rice with shiitake mushrooms and chicken

This fried glutinous rice (with chicken and mushrooms) is a family favorite among most Malaysian Chinese, who usually gather on weekends either at home or in a restaurant. This dish is a variation of the steamed glutinous chicken rice wrapped in lotus leaves (Lo mai kai) served at a Dim Sum restaurant.

Fried glutinous rice can be served as a main course or as a snack, or can be eaten straight from the pan piping hot, and accompanied by freshly brewed Chinese tea.

Ingredients
250 grams (8.8 oz) glutinous rice (soaked for at least 4 hours, best overnight)
1 whole Chinese sausage (sliced)
6–8 pieces dried shiitake mushrooms (soaked for 2 hours)
300 grams (10.5 oz) uncooked chicken breast/leg (thinly sliced)
1 tablespoon sesame oil
2 tablespoons soy sauce
1 teaspoon oyster sauce (optional)
Salt and pepper to taste
100 mL water
2 cloves garlic (skinned and finely chopped)
1 tablespoon cooking oil

Garnishes
Carrot (julienned)
Spring onions
1 teaspoon sesame seeds (lightly toasted)

Directions
1. Drain the soaked glutinous rice in a colander.
2. In a small bowl, mix sesame oil, soy sauce, and oyster sauce, then set aside. Remove the soaked mushrooms from water and squeeze dry. Flatten them, slice thinly, and add to the marinade of soy sauce and sesame oil. Mix thoroughly.
3. Slice the chicken as desired and mix with the mushrooms, then marinate.
4. On a medium setting, heat a tablespoon of oil in a frying pan. Add chopped garlic. As the garlic browns, add the drained glutinous rice and stir gently, coating all the grains with oil.
5. Continue stirring the rice. As the pan dries out, drizzle a tablespoon of water over the rice. As the contents of the pan sizzle, gently turn the rice to ensure thorough cooking.
6. Do not add water too quickly as this will soak the rice, making it wet and mushy.
7. When the rice grains are almost transparent, taste a few grains. Glutinous rice is cooked when it is chewy.
8. Push the rice to the side of the pan and add the marinated chicken and mushrooms. Stir-fry for a minute and then mix in the rice with the chicken and mushrooms, and add a little water if required. When the chicken is cooked, add the Chinese sausage slices and another tablespoon of water and gently mix everything. Allow the water to evaporate and continue turning the mixture until the rice begins to crisp and brown.
9. Serve immediately and garnish with spring onions, julienned carrot, and sesame seeds.

Serves 6.

Watch Ms. Faulkner demonstrate how to prepare this scrumptious dish in a 5:08 video on YouTube at http://snipurl.com/panfried_rice.
Scientists are scouring the deep and “wild” end of the rice gene pool to help find hidden traits and genes that can help breed new rice varieties better at thriving and producing food in difficult environments.

Although the genetic diversity of cultivated rice is already rich, widening its diversity through its wild relatives is significant, as they possess high-value traits that can help breeders make new rice varieties that can stand up to climate change and other challenges.

Rice has wild or undomesticated relatives, called “wild rice,” that are rich repositories of genetic material that can provide tolerance of environmental stresses and help improve yield. Wild rice diversity is considered to be in the periphery of the rice gene pool, with the center being around varieties cultivated from the two main species of rice: Oryza sativa and O. glaberrima. In total, there are 27 species of rice.

Wild rice’s richness in desirable traits, such as pest and disease resistance, is borne out of centuries of surviving in harsh environments—untended and away from human intervention. These important traits have been infused in cultivated varieties to help protect them against pests and diseases that have affected thousands of hectares of rice farms and have caused millions of dollars of damage.

Helping farmers
The International Rice Research Institute (IRRI) and its partners carry out rice improvement activities using wild rice traits. By way of conventional breeding and modern biotechnological tools, these crucial traits are transferred to cultivated varieties and have resulted in rice varieties with improved resistance to bacterial blight, blast, tungro, brown planthopper, and soil toxicity.

To name a few species, wild rice O. minuta gave breeders genes that contain resistance to bacterial blight, blast, brown planthopper, and sheath blight. Resistance to tungro virus, on the other hand, was found in wild rice O. rufipogon.

The opportunities are expanding as more is learned about how to explore the diversity in wild rice to improve cultivated rice. Dr. Kshirod Jena, head of interspecific hybridization breeding at IRRI, stated, “We have now succeeded in transferring genes from almost every species in Oryza, giving access to the full range of genetic diversity in the genus.

“Our latest important result is the transfer of a gene with resistance to brown planthopper from O. australiensis to a high-yielding brown planthopper-resistant variety for cultivation in South Korea,” said Dr. Jena. “This variety is called Anmi. This is a significant achievement because host-plant resistance is an effective way to control brown planthopper—a pest that has rendered hundreds of millions of dollars in damage across Asia.

“From the same wild rice, O. australiensis, we have identified a blast-resistance gene that will soon be infused in cultivated varieties,” Dr. Jena explained. “But perhaps the brightest prospect from wild rice is that we at IRRI are in the process of

**A chance in the wild**

by Ma. Lizbeth Baroña
Japan is the only industrialized country whose agriculture is based on rice, its staple food. Rice cultivation in Japan was introduced from China between 13,000 and 300 BC. Since then, rice farming has had a great influence on the social structure and culture of the country.

Its rice ecosystems occur across a wide range of latitudes, including the subtropical, temperate, and subtemperate zones. Almost all rice is grown in summer under irrigated conditions. Most of its rice fields are on the plains of the country’s major river basins, but many rice fields are also found on terraces and in valleys.

Sacred rice
In the 13th century, rice was Japan’s currency before China introduced metal, and rice had a political role—the rank of a feudal lord was determined by the amount of rice he produced or by the size of the rice-producing area of his territory.

In addition, the Japanese retain a unique regard for rice. For them, it is sacred. This reverence for rice is attributed to Shintoism, a Japanese religion. Shintoists believe that an emperor is a descendant of the creator of Japan, and that natural things and phenomena have deities—in rice resides the deity of food. This belief, among others, makes locally produced rice superior and totally different from foreign rice for the Japanese people.

Early rice science
The earliest recorded experiments on rice were in the 1400s and 1500s to determine its maturity, cultivation, traits, and glutinous properties.

By the 1800s, many farmers were carefully selecting rice varieties for planting. Afterward, the National Agricultural Experiment Station in Japan began selecting pure lines of rice varieties as soon as the station was established in 1893.

In 1905, Japan developed a rice seeder, called “octopus,” that could seed 16 hills in one move, and it was then widely adopted by farmers. Come 1910, the pedal thresher was invented in the country.

Japanese rice breeders began developing varieties for cold tolerance in 1935, and for blast resistance in the 1940s. They developed a series of rice varieties that had stiff straws, upright leaves, good response to fertilizer, and high yield potential.

In the early 1960s, rice consumption per capita was nearly 120 kilograms. Because of a high demand for rice, the government invested in research to generate better rice varieties and production techniques. The government even led a contest in search of a rice farmer with the highest yield in the country—the winner produced around 10 tons per hectare during that time.

A pioneering partner
Japan has been an important partner to the International Rice Research Institute (IRRI) since the Institute’s establishment. It provided leadership by having a seat on the first IRRI board of trustees in the person of Dr. Hitoshi Kihara in 1960. Since then, Japan has always been represented on the board, with Dr. Mutsuo Iwamoto as its current representative.

Japan has also long been one of IRRI’s most generous supporters, giving a total of more than US$191 million to IRRI between 1971 and 2010. Japan became a member of the CGIAR in 1972.
Agricultural commodity prices will remain high for the next 10 years. Income growth in most developing countries will rise. Commodity prices will remain strong and will boost long-term farm sector profitability and encourage more investments in research and production that will improve yields and increase production area.

The Foreign Agricultural Service (FAS), the export arm of the United States Department of Agriculture (USDA), identified eight key factors that will dominate global agriculture in the coming decade.

by V. Subramanian

1. Rise of the middle class
Economic growth—especially from emerging markets—is expected to drive the global economy, as the middle-class population is estimated to double within the next 10 years. Following the recession in 2010—the worst recession in decades—growth and development, particularly in developing countries, will prompt future growth despite the current economic weakness in developed regions such as the U.S., Europe, and Japan. The middle class from developing countries is estimated to expand up to 104% until 2020, compared with 9% from developed countries. Much of the increase will come from China and India (see figure). Interestingly, while the threat of a new global recession looms, the rise in the middle-class demographics will not only create a significant global food demand but also reveal higher income elasticity for food in emerging markets. Consequently, it will affect consumption patterns, as buying decisions based on price and food choices can shift quickly between commodities.

2. Falling dollar
USDA expects the agricultural trade-weighted value of the U.S. dollar to weaken further through 2021 and thus put more upward pressure on commodity prices. Commodity prices are inversely related to the dollar, and a relatively weaker dollar raises a foreign buyer’s purchasing power and hence demand for those commodities. Since 2002, the U.S. currency has been trending down and most private economists believe that its value will ease against a broad range of currencies.

3. Demand for biofuel
Demand for feedstock such as grains, vegetable oils, and sugar has been boosted by the continuously expanding production of global biofuels, especially in the U.S. and the European Union, driven by the Renewable Fuels Standard in the U.S. and the Renewable Energy Directive in the European Union. In total, 36 countries (mostly in the Western Hemisphere) have adopted policies encouraging the use of biofuels. There is, however, a “new generation” of biofuels that are not based on food crops (such as algae), which could help reduce the world’s reliance on food-based feedstock for energy.

4. Trade liberalization
After a 150% increase in trade liberalization since 2000, trade has grown to $700 billion and it is projected to cross the $1 trillion mark by 2020. China and Southeast Asia, in particular, have seen a significant increase in trade, and the growing list of Free Trade Agreements at bilateral and regional levels is expected to fuel production growth in exporting countries.
As I write this article, The Rice Trader is just returning from the TRT Rice Network 2012 event in Dubai, United Arab Emirates. It was a one-day networking seminar, with some nice social events for members of the global trade.

We found Dubai to be quite fascinating, given its mix of various cultures and people from different walks of life. Also, the Burj Khalifa, the tallest building in the world, was particularly interesting as the immensity of this engineering feat was amazing to behold. We also got to appreciate the beautiful musical fountain show, which runs every 30 minutes from 6 to 11 p.m. It was even hard to pull one of our staff away, after an extended picture-taking session. The experience was striking as it reminded us that, wherever we go in the world, we will always meet new people and see new things.

Our next big event is in Miami, Florida, USA, on 1-4 May 2012. Talks on the trade in this region include the market's direction in the coming months and views on this critical time in the market. Among the networking events we arranged is a luxury yacht tour around the Miami Bay to give participants a nice experience.

Moving on to the action in the market—or the lack thereof—we are in the midst of a very interesting dilemma in the rice industry. Markets are actively moving and price volatility has been a major concern of late. Similar to what happened in 2008, the major food grain markets seem to be up for a rather interesting period in 2013 given the changing price of food relative to the high (and rising) price of oil (at US$105 per barrel at the time of writing). Notably, oil could be the single most important variable in the cost of production, which will affect global production and consumption trends.

Furthermore, like in 2008, the prices of rice lag behind the prices of other grains. The only difference today is that the rice market appears to have ample supplies, especially with India back in the picture (even though it is no longer exporting aggressively compared to the final quarter of 2011, after the government lifted the ban on nonbasmati rice exports in September 2011).

Many players forecast that India will export more than 5 million tons in 2012, and that it will have enough, if not more, supplies of rice (along with wheat) to keep the world’s food grain balance in check—unless a major unexpected event occurs such as a poor monsoon season or if the Indian government passes its Food Security Bill, which will prioritize having ample stocks of food (such as rice) instead of exporting stocks. Note, however, that India’s return and its massive stocks raise a red flag despite the fact that the cheap bumper crop has already moderated the impact of Thailand’s prices, which increased when the Thai government bought rice from farmers at a higher price.

India has to be watched because high supply and low prices could leave a trail of negative impacts on the market. For instance, investments in future production might decline if oversupply pulls prices down, and supply may see an imbalance if demand continues to grow, partly because of the relatively lower domestic prices of rice.

One also needs to keep an eye on the U.S., as questions surround how the country will ration demand long enough for the South American players to return, to pick up the slack and help supply importing countries. Also, a lack of strength in rice futures combining with a strong push toward other (more profitable) food grains may bring U.S. rice production lower than initially thought. This is further complicated by South America’s significantly smaller rice crop in 2012.

The price of oil and the rising cost of production are key concerns in the short to medium term, which is expected to drive growers to shift to other crops that use less fertilizer and fuel. Additionally, medium-grain rice production may decrease largely because of poor prices, better crop alternatives, and a lack of water, particularly in California.

Because of this increasing shift away from rice production in the U.S.—and even in South America—Asia, to some degree, will fill the gap and supply some of these two origins’ traditional export markets. Add political dynamics and the equation becomes more complicated. Will the U.S. allow other exporters to take away its markets in Haiti and Central America, which it fought hard for?

Indeed, Asia will have a bigger role when it comes to supplying the world, and one has to wonder if the spread between rice prices and the increasing cost of production will have an impact on the market’s future direction. Certainly, we can expect many more surprises before the truth is known. Frankly, we feel concerned when the market is too bearish or too bullish; right now, the amount of negativity in the market is so great that perhaps it is clouding the truth.
Thailand has been the largest rice exporter in the world for nearly five decades, when the volume of Thai rice exports steadily increased from 1 million tons in 1974-75 to more than 10 million tons in 2010-11 (Fig. 1). The country’s share in the global market peaked at 43% in 1988-89; since then, it has been fluctuating between 25% and 30%. During this period, however, global rice trade has tripled from 11 to 33 million tons in the wake of trade liberalization among many countries in the late 1980s and the 1994 General Agreement on Tariffs and Trade (GATT).

As part of their GATT market access commitments, countries partially opened up rice trade, which increased the volume more than 50% in the past decade. The expansion of trade came along with the emergence of Vietnam and India as growing exporters in the global rice market. In the last decade, Vietnam and India together have accounted for nearly a third of global rice trade. Despite losing market share, Thailand has been able to steadily increase its volume of exports and maintain its status as the largest exporter in the world.

In late 2011, the newly elected Thai government reintroduced the rice pledging scheme, which was part of its election promise for the 2011 main crop, by raising the price that the government pays farmers for rice by almost 50%. Between October 2011 and February 2012, nearly 7 million tons reportedly entered the rice pledging scheme from the main rice crop. This occurred despite significant crop loss due to floods. As expected, the government extended the current pledging scheme, from the end of February to September 2012.

**Current status**

As reported in our price and market blog1 in September 2011, the pledging program encouraged Thai farmers to expand their rice area in response to higher price support and to offset last year’s crop losses due to floods. The United States Department of Agriculture (USDA) now projects the 2011-12 Thai rice crop to be 20.3 million tons of milled rice, which is more or less the same as the previous year’s production.

In addition, rice has been diverted from the market to warehouses, and Thai exporters have been priced out of the export market. Unfortunately, India’s grand entry into the nonbasmati export market, after 4 years, has made matters worse for Thai exporters. The quoted prices for Thai white and parboiled rice were higher by nearly $200 per ton than their Indian counterparts during the initial months after India’s resumption of nonbasmati rice exports (Fig. 2). However, this price difference has narrowed with the steady decline in Thai price quotations in recent months, but then again the price difference still remains around $100 per ton.

India’s record production in 2011 and swelling procurement stocks continue to keep India in the export market. Supported by a weak rupee, India’s exports remain overly aggressive in racking up sales. In this price war, Vietnam also lost some market because of its high quotations, which closely followed Thai prices.

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Building trust in rice trade

Indonesia and the Philippines move toward rice self-sufficiency

Rice availability has been considered a key indicator of food security in Asia for many years. Thus, rice continues to command unrivaled political attention in Southeast Asia, drawing a heavy-handed approach to the rice economy from governments of exporting and importing countries. One recent policy that has been a subject of constant argumentation is the rice self-sufficiency program of two top importing countries—the Philippines and Indonesia.

Toward self-sufficiency
The 2007-08 food price crisis deepened existing distrust between exporting and importing countries, and led to instability in the international rice market. It also triggered strong long-term policy responses that sought to secure domestic supplies and stable prices.

Two of the world’s largest rice importers pre-crisis—the Philippines and Indonesia—have taken steps to be less reliant on the world market. Both pursued substantial rice production initiatives and pledged to be self-sufficient by 2013 and 2014, respectively, and aimed to be net exporters soon after.

In the context of an opaque, thin, and relatively unstable rice trade, the push by the Philippines and Indonesia toward self-sufficiency seems logical to secure domestic supplies and stabilize domestic rice prices. However, this strategic shift will have an impact on the larger regional rice economy.

Securing sufficient local supplies and stabilizing domestic rice prices will come at a substantial economic cost to both countries. Many rice farmers are choosing to diversify production to include or exclusively produce other crops in order to generate a larger income, given the declining economic importance and profitability of rice, as evident in its decreased share in the region’s gross domestic product (GDP) from 14.5% in 1961 to just 3.8% in 2007. Hence, sticking to planting rice to produce a sufficient amount may pose economic dilemmas. Furthermore, with limited or no imports, consumers may face increased rice prices as governments support farmers and local rice production by buying rice from the farmers at a higher farm-gate price.

Perhaps the strongest argument for Indonesia and the Philippines to resist isolationist self-sufficiency and to continue to participate in the world rice market is to ensure stability during localized shocks. Although no existing studies examine the costs and benefits of these countries’ strategies as they move toward self-sufficiency, general literature on rice trade liberalization suggests that participation in the world market, rather than self-sufficiency strategies, serves to better secure domestic supplies, especially during local market shocks.

Building trust
As they shift toward being stronger producers of rice, the Philippines and Indonesia can generate more trust and enhanced cooperation in the regional rice economy, especially since Southeast Asian countries share similar challenges in food security.

Both countries could further build on this trust by maintaining and deepening participation in the world rice market. Isolationist self-sufficiency in rice and restricted world market engagement are not viable long-term food security solutions. More open engagement with the world rice market would enhance both countries’ security in rice supply, resilience to shocks, and opportunities to export. It would also have an impact of broadening and strengthening the regional rice market. Building trust and confidence in the market through enhanced engagement will be just one step, but it can be a significant measure to promote a more stable Southeast Asian rice economy.

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