PhilRice Magazine

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Healthy living with rice

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About the cover

Bring vibrancy to food. A healthy plate doesn't have to be boring. Pairing brown rice with your favorite colorful dish is a good start. Brown rice is just one of the many health-smart rice choices now made available and even affordable to develop healthier eating habits among Filipinos.

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Rice-awareness

Hop on to healthy rice-eating

If there is an emissary that can permeate our body's cells to pass on micronutrients without being accosted, it must be rice. Yes, you read it right. Rice does not only provide our much-needed carbohydrates. It can also be a courier of certain minute nutrients that are vitally beneficial to human health.

We Filipinos are rice eaters. We somehow feel deprived when we do not get to eat our favorite staple. And when we do, we indulge. "Extra rice" excuses more expense. "No rice, no rights," militants would even cry. We tend to disregard the health complications careless rice-eating could inflict on our body.

More and more literature declare that eating rice in excessive amounts may be detrimental to our physique. We reinforce the admonition that too much of anything is not good at all. However, we cannot also ignore the screams of our naturally rice-loving tummies that groan "I cannot live without rice!"

While we, at PhilRice, work on improving farm productivity, profitability, sustainability, and resiliency of farmers, we also put premium on the welfare of rice devourers. Hence, our research-for-development (R4D) efforts include making rice an enjoyable yet healthier staple. In fact, our food scientists stride toward using rice as a vehicle to carry nutrients to the body. Given the right amount and processing, raw and cooked rice can be made more palatable while facilitating nutrient absorption.

This issue of the magazine presents options to the rice-consuming public on how to prepare and savor rice, the healthier way. For better understanding, we also accentuate research endeavors that study the factors and processes to make rice a better food. We want us to eat it without guilt.

To propel this advocacy, the rice R4D sector strongly supports policy initiatives that promote health consciousness in food consumption. In here, we revisit these directives as we present other forms of rice that are increasingly becoming available and affordable – brown rice, pigmented rice, rice blends, among other rice products that are now visible in the market.

We are delighted to know that there are groups and individuals who share with us the vision of this advocacy. Some local government units across the country implement the brown rice resolution encouraging food establishments to serve brown rice. PhilRice and the Food and Nutrition Research Institute, on one hand, continuously develops healthy rice recipes that can be prepared at home.

Some individuals also attest to the benefits of eating different rice forms. Their testimonials will give justice to the development of rice and rice-based products to suit the needs and preferences of rice consumers. The Yummy Brown page will surely tickle your fancy and curiosity to try the recipes concocted by food institutions.

On a national perspective, we also want to emphasize the contribution of mixing other staples with rice to the country's attainment of a higher food sufficiency level. Saving rice on the consumers' end of the supply-and-demand equation will significantly impact the availability of the commodity to the greater public. We draw inspiration from the common view of President Duterte and Agri-Secretary Piñol that the "development of agriculture and marine resources is a sure-fire formula to ensure available and affordable food for the country."

We believe that it is every individual's responsibility to take care of his/her body. It is our utmost desire to educate through this magazine about the role of rice in healthy living.

With rice in its improved forms, you can be "hexy". Stay healthy and feel sexy! •

VOL 29 NO. 3 news
JULY-SEPT 2016

Awards won in national confab

SONNY P. PASIONA

Three research teams of PhilRice won awards in the 46th Crop Science Society of the Philippines Scientific Conference in General Santos City, June 13-18.

Two teams from the Rice Chemistry and Food Science Division (RCFSD) won Best Paper and Poster awards for downstream category while the FutureRice Program won the Best Poster in the technology extension, dissemination, and education category.

Best paper *Potential of Algae as Aquaculture Feed Ingredient* was co-authored by researchers from the Bureau of Fisheries and Aquatic Resources – National Freshwater Fisheries Technology Center in CLSU-Nueva Ecija and the Institute of Biological Sciences, UP Los Baños.

"Algae are abundant in bodies of water, including ponds and rice paddies. But they are often neglected and underutilized," said PhilRice's Evelyn Bandonill, main author.

The study saw the feasibility of mixing algae in aquaculture feeds and recommended further research on the "economic viability of manufacturing algal-incorporated animal feeds" that can potentially increase farmers' income.

Best poster *Suitability of Adlai in Complementing Rice as Staple Food* is about helping achieve rice self-sufficiency through alternative staples. RCFSD researchers Henry Mamucod, Amelia Morales, Rosaly Manaois, and Marissa Romero explored the potential of *adlai*, an indigenous food crop, as a complementing staple food for rice.

Their work showed that *ginampay*, a variety of *adlai*, can be a good source of carbohydrates substituting rice at 50:50 ratio while providing the consumer the same eating satisfaction and more proteins and fats.

Another best poster awardee, the FutureRice Program team explored the challenges and opportunities of building a rice agri-tourism farm in line with the recently signed Farm Tourism Development Act of 2016. The team is composed of Jan Lois Zippora Libed, Roger Barroga, Marian Rikka Anora, and Nehemiah Caballong.

The team has integrated recreation, hands-on experience, and educational facilities in the 5-ha FutureRice farm. It was also the site where "AlDub Rice" was created in April as a form of rice paddy art, which stirred public interest on rice innovations, especially the youth.

Over 200 crop science researchers, academicians, development professionals, and students from public and private institutions participated in the conference themed *Empowering Crop Scientists for ASEAN Leadership.*
– Sonny P. Pasiona

PHILRICE PHOTO

Now available: affordable brown rice with rewards

Beginning August 28, many more Filipinos nationwide can enjoy affordable brown rice and get four rewards as the Department of Agriculture (DA) launches the #brown4good challenge.

Through the BROWN4good project, brown or unpolished rice is made affordable and accessible, according to Hazel Antonio, DA's Be RICEponsible campaign director. Brown rice that used to be P50-80 per kilo is now only P37-40 in partner malls and public market retailers.

The #BROWN4good, on the other hand, is a major activity of the campaign, led by DA-PhilRice. This activity aims to encourage every consumer through the use of social media (Facebook, Instagram, Twitter) to eat brown rice and promote its consumption to their networks, according to Antonio.

Accepting the challenge

"We really need influential people to use their networks to promote the four goodness of brown rice. Thus, the #BROWN4good challenge wherein a brown rice eater would have to influence his/her network to do four goodness simply by eating brown rice," explained Antonio.

Consumers will take a photo of their brown rice meal, cooked at home or bought from their favorite food establishments; post the photo in social media; caption it #BROWN4good and #(their region); and challenge their friends to do the same by tagging them.

The rewards of the challengers are goodness to health, farmers, country, and the less fortunate. There is goodness to health as research shows that brown rice is rich in protein, dietary fiber, vitamins, minerals, and antioxidants, and can help prevent type 2 diabetes, cancer, cardio-vascular diseases, and hypertension. There is the gratification of being able to bring goodness to others – the farmers—since the challengers could help the farmers double their income. There is goodness to the country because brown rice could add 10% to our local rice supply. And finally, goodness to the less fortunate because for every hashtag, DA will donate one cup of raw brown rice to poor Filipinos through charities nationwide.

Better access to brown rice

Brown rice is made more accessible by tapping farmers' cooperatives to produce their own brown rice stocks and then linking them directly to food establishments and retailers. This way, farmers' income is also doubled.

Affordable brown rice can be bought from partner malls and public market retailers in Manila; Baguio City; San Fernando City, La Union; Ilagan City, Isabela; Cabanatuan City, Nueva Ecija; Los Baños, Laguna; Puerto Princesa City, Palawan; Camarines Sur, Legazpi and Sorsogon Cities in Bicol; Iloilo City; Tagbilaran City, Bohol; Cebu City; and in the cities of Tacloban, Dipolog, Cagayan de Oro, Davao, General Santos, Butuan, Cotabato, and Bacolod.

Hotels, restaurants, and other food establishments in the enumerated areas will also serve brown rice at prices at par with that of white.

Members of the Hotels and Restaurants Association of the Philippines and similar associations in Bohol, Iloilo, Cebu, and La Union; and the Legazpi Stakeholders Council are among the project partners in the food industry, and will serve brown rice starting August 28.

"The goal is to have at least one populous area per region that would serve and sell brown rice at an affordable price. We are still working things out in other areas but come the launching, access to brown rice should not be a limitation, at least in the most progressive city of a region," said Antonio.

The #BROWN4good challenge will run from August 28 to October 22, 2016 while the donation of brown rice to charities in different regions will be in November, a highlight of the celebration of the National Rice Awareness Month. The challenge is a part of the Be RICEponsible Campaign, an advocacy effort that promotes responsible consumption by not wasting rice, eating healthier rice, and by valuing the hard work of our farmers. – *Adeline P. Gomez*

Preventing pests, diseases during rainy season

A PhilRice crop protection expert reminds rice farmers that early detection is the best way to prevent the spread of disease and avert yield loss this wet season.

Dr. Jennifer Niones says farmers should watch out for bacterial leaf blight, the fungal diseases rice blast and sheath blight, and rice tungro. Diseases are more prevalent during the wet season as weather conditions are more conducive to disease development and severity.

Choosing the right variety—adaptable to the local environment and with high yield – is crucial. Farmers must select varieties that are resistant to the disease(s) that previously attacked their farms, says Niones.

Presently, there are many modern varieties that are resistant to pests and diseases such as PSB Rc10 (for rice blast), Rc242 (for BLB), and Rc 120 (tungro).

Lands must be well-prepared before planting. Pathogens and other bacterial cells can thrive on undecomposed rice stubbles and straw.

The use of the *modified dapog* method is also recommended to fast-track seedling preparation and minimize transplanting shock. Farmers should also keep nursery beds and fields from flooding and reduce plant injury during transplanting. Plant sanitation and regular weeding should be practiced.

Excessive use of nitrogen (N) fertilizer is discouraged in the wet season. When rice receives too much N, it becomes more attractive to insect pests and diseases. It can even lodge.

"Overuse of synthetic chemicals is a waste of resources. Farmers should focus on preventing the onset of the disease, not by spraying but by applying the aforementioned cultural management practices," said Niones. – *Donna Cris P. Corpuz*

PhilRice communicator wins int'l award

A staff writer/photographer of this magazine won again— this time in a photo contest sponsored by a US-based non-profit organization, May 10.

Jayson C. Berto, 23, also a videographer of the Institute's Development Communication (DevCom) Division, won in the empowering youth category of the 5th International Research & Exchanges (IREX) Board Make a Better World Photo Contest, and received $250 cash prize.

IREX selected best images of scenes and individuals around the world that demonstrate one or more of four categories: empowering youth, cultivating leaders, strengthening institutions, and extending access to quality education and information.

Berto's winning shot titled *Youth in rice farming* is about high school students' involvement in the Infomediary Campaign in Asuncion, Davao del Norte. The photo shows students using the Leaf Color Chart, a tool that monitors the nitrogen status of the rice plant.

"The knowledge and experiences on modern technologies that these students gained from their school could help improve their parents' rice-farming activities, and those in their neighboring communities," Berto said.

"This kind of activity introduces youth to technologies and tools that help prepare them for the workforce and become active community leaders," IREX observed with delight.

In March 2016, Berto also received an award as a videographer from the International Monetary Fund during the Advancing Asia Conference in India. The winning video documented how the Infomediary Campaign-participating school engaged farmers in a community by leading an agricultural extension activity.

A son of Tublay, Benguet and a DevCom alumnus of the Benguet State University in La Trinidad, Berto joined PhilRice in 2013.

For more information on the campaign, visit www.infomediary4d.com. – *Mary Grace M. Nidoy*

Abdula, Acting PhilRice ED

Dr. Sailila Estilong Abdula, chief science research specialist and designated acting director of the PhilRice Midsayap branch station in North Cotabato, has been handpicked by Agriculture Secretary Emmanuel Piñol as the Acting Executive Director of PhilRice effective August 2016.

Abdula, 44, son of West Patadon, Matalam, North Cotabato obtained his PhD in Agriculture, major in plant genetics, from Chungbuk National University in Korea in August 2012. As a rice breeder, he helped develop NSIC Rc120 and Rc226 to address the tungro rice disease in Southern Mindanao.

He started working as junior researcher at PhilRice in September 1996 after finishing in 1995 his BS in Agriculture (cum laude) from the University of Southern Mindanao in Kabacan, North Cotabato.

Technologies for the rainy season

After the onslaught of El Niño, farmers must brace for the rainy season by using appropriate varieties and other technologies in rice farming.

PhilRice's Dr. Norvie Manigbas, plant breeder, advises farmers to plant varieties with heights of at most 100 cm and with strong stems that can tolerate 40 to 60-kph wind speed, such as PSB Rc14, Rc68, Rc9, and NSIC Rc222.

"Rainfed areas are also prone to flooding. The varieties suited for this condition are PSB Rc18, which can withstand 5-7 days of complete submergence during the vegetative stage; NSIC Rc194, which can survive, grow, and develop even after 10-14 days of complete submergence; and Rc68, a submergence-tolerant and drought-resistant variety," Manigbas said. Farmers get less yields under stressed conditions.

"Fertilizers cannot be maximized, as there is limited sunlight during the rainy season. Depending on soil analysis results and recommended nutrient requirement rates, it is better to reduce fertilizer application rates by 20-30% in the wet season to escape lodging," Manigbas explained.

Under rainfed conditions, Manigbas encourages farmers to practice synchronous planting in their communities. Planting within a one-month period helps reduce incidence of pests and diseases in a specific area, thus minimizing yield loss.

Dry land preparation is also desired so farmers can do direct seeding when the rain comes. With this technique, the seeds will start to germinate within 5 days.

Under irrigated lowland conditions, land preparation is best done some 20 days before transplanting or direct seeding. Levees and dikes should be repaired to prevent the escape of water.

Farmers can use the wetbed or *dapog* method for seedling establishment depending on field conditions. Proper drainage avoids flooding, and use of machines during land preparation, harvesting, threshing, and drying saves time and labor.

"Time is vital during the wet season especially during harvest. As the rain usually comes in the afternoon, we suggest the combine harvester or reaper to hasten harvesting operations." Manigbas emphasizes the importance of finishing field operations in the shortest possible time.

JAYSON C. BERTO

"The general rule is to harvest and thresh the crop within a short period of time and dry the grains to a safe moisture content," Manigbas said. Drying of *palay* is done in flatbed dryers, and on nylon nets or canvas for easier turnover when the rain falls.

For more information on rice varieties and technologies for wet season, please contact the PhilRice Text Center at 0920-911-1398. – *Mary Grace M. Nidoy*

On the road with the new DA Secretary

MARY GRACE M. NIDOY

HE CAME IN HIS RED POLO SHIRT SPORTING A BLACK BASEBALL CAP ENGRAVED WITH THE MOST POPULAR LAST NAME OF THE MOMENT – DUTERTE.

In between photo opportunities with PhilRice personnel, the former governor of North Cotabato and radio broadcaster raises his fist, a pose we have become familiar with since the campaign period, and talks with a commanding and well-modulated voice.

Emmanuel Fantin Piñol had PhilRice as his first stop in the Science City of Muñoz leg of his nationwide journey he calls *"biyaheng bukid."* This marks his first visit as new Agriculture Secretary and ex-officio chair of the PhilRice Board of Trustees.

"I'm one guy who talks straight," he declares. No muss, no fuss. After all, he's always on the go, and will become busier in the next 6 years.

On his way to his second stop, I was able to squeeze in a few questions.

How did your interest in agriculture start?

I was born in a North Cotabato farm. We grew up, reared and nurtured by a father who loved farming. On weekends, we would all parade to the farm. There are 11 of us in the family, all boys. Since we were a poor family, during summer, we would look for a job in the farm for our allowance during the opening of classes. I became a journalist so I left the farm and went to Manila but all throughout, I dreamed of one day going back to my province and do farming. When Fidel V. Ramos became President in 1992, I went back to my province and re-organized the sugarcane farmers. We revived a sugar mill and I got involved in sugarcane farming. After that, I became Mayor of M'lang, then governor of North Cotabato. After I lost in the election, I went back to farming and started breeding my own chickens and putting up my nursery. I practically know almost all of the problems confronting the Filipino farmer.

JAYSON C. BERTO


ANDREI B. LANUZA

> I'll make sure that DA is brought back to its original mandate which is to produce food. I'll make sure that there will be no corruption in the department and we'd be able to fulfill the commitment of the President—available and affordable food for the Filipinos.
>
> - DA SECRETARY EMMANUEL F. PIÑOL

What are the most important lessons that you have learned as a farmer?

God has offered us so much resources— land and water. The problem is we have not really realized that the resources are there for us to maximize so we squander the opportunity. Also, the government has not really addressed the issues confronting the farmers such as technology, financing, and marketing. So I believe that we really have to reconcile the resources that we have, the desire of the farmer to rise out of poverty, and the desire of government to help the farmers. We have to come up with a strategy on how to get all of these things together so that we'd be able to realize agricultural progress.

How do you plan to achieve President Duterte's objectives for agriculture in the next 6 years?

We just have to be honest to ourselves. The objective is very simple— available and affordable food, and stop the corruption in DA. I think all of these things are doable, we just have to stop the corruption, simplify the programs, and go back to the basic mandate of DA which is to produce food. All through these years, there has been a shift in the focus of DA. It has been involved with a lot of projects that are really non-essential to the basic mandate of food production. So I'd like to bring back DA to the original path that it is supposed to take, which is food production.

What can people expect from you as the new DA Secretary?

I'll make sure that DA is brought back to its original mandate which is to produce food. I'll make sure that there will be no corruption in the department and we'd be able to fulfill the commitment of the President—available and affordable food for the Filipinos.

How do you describe your leadership style?

Smooth and easy. That's how I would describe it.

What are your dreams for the Filipino farmers?

That they will be lifted out of poverty and they will be able to send their children to school. I dream that they will be able to enjoy the simple luxuries of life just like other families.

What is your plan for the rice industry?

We have to produce enough rice for the country. We cannot rely on our neighbors anymore because of climate change. We have to understand that recently, even our traditional suppliers of rice also experienced the effects of El Niño. There is a great risk that if and when El Niño hits, all of us in the region, we will have a very serious problem of where to get the rice supply. So we might as well come up with our own program, do inventory, and project the climatic changes so that we'd be able to prepare.

Can you tell us thoughts on your *biyaheng bukid*?

It's a dramatic eye-opener for me. Even if I'm a farmer, I'm seeing a lot of things that I need to know. *Alam ko na yung hirap ng* farmers *pero hindi ko alam na ganito kahirap* (I already knew the struggles of our farmers but not their magnitude).

Do you also want your children to venture in agriculture?

My youngest is going to be a veterinarian. He is going to take over the farm when I die. Actually, the farm is already under the name of my children. I've already divided it among them. I'm just farming in the land owned by my children. My eldest daughter, a doctor, has now taken over the farm because of my appointment as Secretary. Somebody has to continue breeding the chickens.

What are your similarities with your friend, President Duterte?

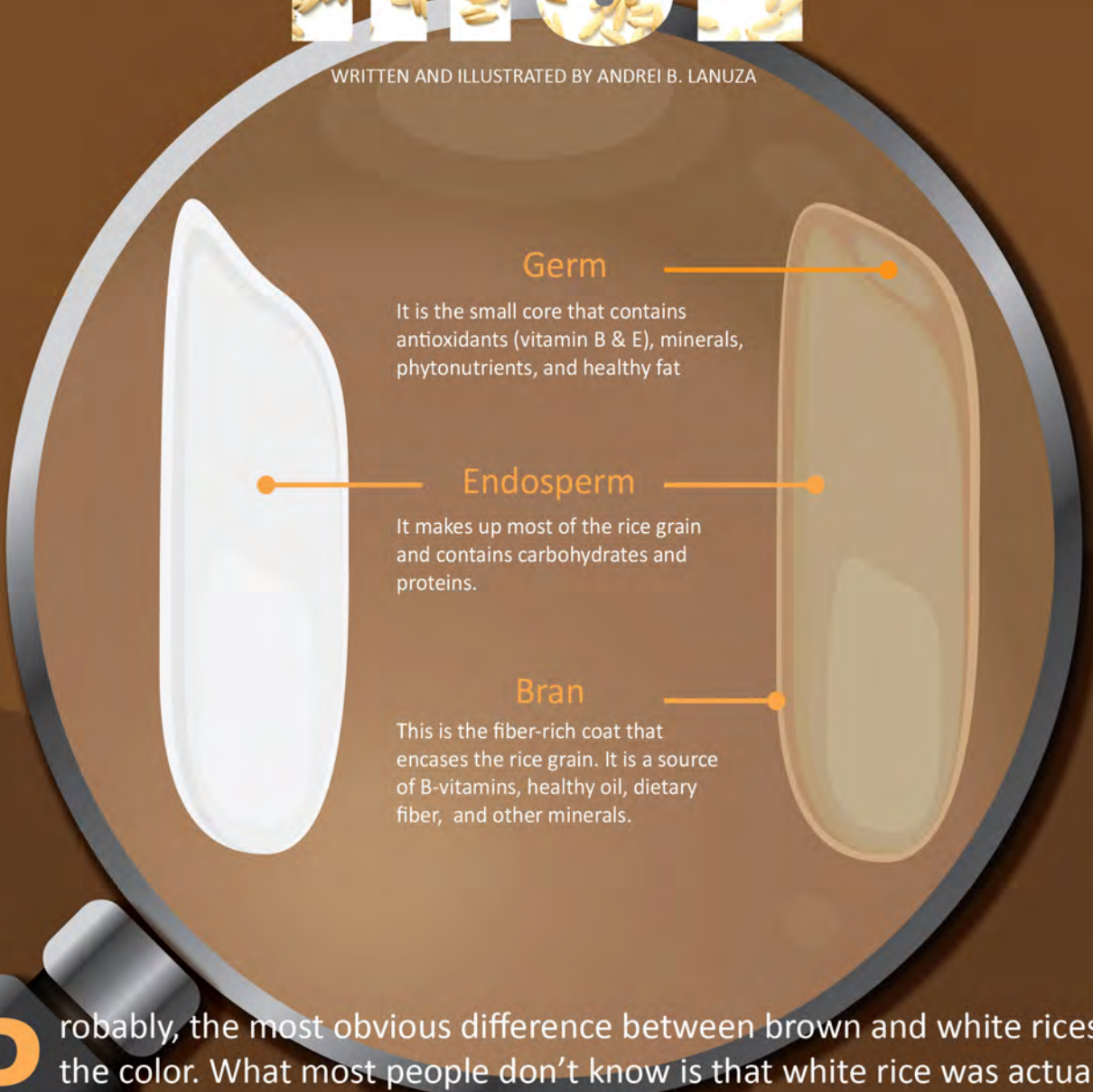
We both love people. He's the master politician. He hasn't lost in elections. I lost twice. I admire his spirit of inclusivity in governance. He reaches out to everybody.

We reach the Philippine Center for Postharvest Development and Mechanization, his second stop for the day. He comes out of the car and extends his hand to a throng of people meeting him for the first time. In the midst of greetings and handshakes, it is clear, he loves people. •

GET TO KNOW

BROWN RICE

WRITTEN AND ILLUSTRATED BY ANDREI B. LANUZA



Probably, the most obvious difference between brown and white rices is the color. What most people don't know is that white rice was actually brown rice before being polished further. That brown rice is a rice variety is also a common misconception. Let's look beyond the color and get to know brown rice better.

MILLING AND POLISHING

Before post-processing, every grain of white rice was once brown. That's right. Brown rice isn't a variety, but a product of less processing. Paddy rice undergoes dehulling and polishing to produce white rice Brown rice only undergoes dehulling, leaving the bran intact. The bran gives brown rice its distinct color. This is why brown rice is also called 'unpolished rice' or 'whole rice'.

WHICH VARIETY?

Any rice variety can be processed into brown rice. But some varieties such as NSIC Rc160, and Rc218 or Mestiso 19 are best because they are softer and have relatively better eating quality making them more palatable. This can help people who are new to eating brown rice ease into it.

PREPARATION AND COOKING

Never treat brown rice like white rice when cooking. Due to the bran covering the surface of brown rice, it can optionally be soaked in water for about 30 minutes for a softer consistency. To cook brown rice, a 2:1 water to grain ratio is ideal, although water may vary depending on the desired consistency.

EATING QUALITY

Brown rice and white rice differ in taste and texture. Brown rice has an almost nutty flavor and chewy texture. White rice has a milder (almost neutral) flavor and a softer, more delicate texture.

STORAGE AND SHELF-LIFE

The bran of brown rice contains important oils such as the antioxidant γ-oryzanol and omega-3 fatty acids. However, due to its oil content, brown rice has a significantly lower storage life of about 6 months before it turns rancid due to oxidation. Refrigeration can extend its shelf-life up to 12 months.

DEMAND AND PRICE

The low demand for brown rice thus far translates to thinner supplies that ultimately increase the price. Brown rice made from premium rice varieties is very popular among some specialty establishments and health enthusiasts. They represent a very small group in a market that largely demands white, polished rice.

Source: PhilRice's Rice Chemistry and Food Science Division

PhilRice pushes for brown rice

JAIME A. MANALO IV

In our biggest shopping malls today, brown rice often occupies a conspicuous space side by side with white rice. This was not the case in the past; only white rice—imported or local — of different varieties and classes.

Why?

"Filipinos now realize the health benefits of brown rice," says PhilRice's Dr. Marissa Romero, *High-Value Products from Rice and Its Environment* program leader.

Brown rice is simply unpolished or dehulled rice. It should be stressed that processing or the removal of the hull or husk, and not the color, defines brown rice.

This means that any rice variety including black, red, or other pigmented rices can be converted into brown rice when dehulled.

Over the years, PhilRice has been aggressively researching on and promoting brown rice. In her 2011 paper *Nutritional and health aspects of brown rice*, Romero cited that brown rice is "nutritionally superior to white rice in terms of protein, fat, dietary fiber, B vitamins, vitamin E, minerals, and antioxidants".

There is also vast literature establishing how good brown rice is for our health. Romero cited studies claiming that brown rice is good for people with cardiovascular diseases, some forms of cancer, and diabetes.

Increasing acceptability

While the case for brown rice is far better today than a decade ago, the fact persists that not too many Filipinos want to eat it despite its impressive health benefits.

Romero says people find excuses from its cooking time and eating qualities. Cooking can last up to 40 minutes, it is nutty and chewy.

But PhilRice isn't giving up in addressing these concerns.

Nutrient composition of brown rice and milled rice

Nutrients	Amount per 100 g at 14% Moisture	
	Brown Rice	White Rice
Energy Content (kJ)	1520 - 1610	1460 - 1560
Energy Content (kcal)	363 - 385	349 - 373
Crude Protein (g)	7.1 - 8.3	5.8 - 7.1
Crude Fat (g)	1.6 - 2.8	0.3 - 0.6
Crude Ash (g)	1.0 - 1.5	0.3 - 0.8
Total Dietary Fiber (g)	2.9 - 4.5	0.7 - 2.7
Crude Fiber (g)	0.6 - 1.0	0.2 - 0.5
Available Carbohydrates (g)	73 - 87	77 - 89
Sugars (g)	0.8 - 1.4	0.1 - 0.5
Phytic Acid (g)	0.4 - 0.9	0.1 - 0.2
Phosphorus (g)	0.17 - 0.43	0.08 - 0.15
Phytic Acid P (g)	0.13 - 0.27	0.02 - 0.07
Iron (mg)	0.2 - 5.2	0.2 - 2.8
Zinc (mg)	0.6 - 2.8	0.6 - 2.3
Thiamine (mg)	0.3 - 0.6	0.02 - 0.17
Riboflavin (mg)	0.04 - 0.14	0.02 - 0.06
Niacin (mg)	3.5 - 6.2	1.3 - 2.4
Folate (µg)	16-20	6-9
Vitamin E, a-tocopherol (mg)	0.6 - 2.5	<0.10 - 0.30

Source: Juliano, B. (2010). Grain Quality of Philippine Rice. Philippine Rice Research Institute.

Romero and Henry Corpuz have screened varieties to identify suitable rice types with specific grain quality characteristics that will produce brown rice with desirable cooking and eating qualities.

They recommend rice varieties with low-to-intermediate amylose content and intermediate gelatinization temperature as they have relatively soft cooked brown rice texture, which pleases consumers. They also found that light polishing and soaking could improve the cooking and eating qualities of brown rice.

In another study, Rodel Bulatao and Romero explored germination as another means to make brown rice even more acceptable. Their research outputs are put together in their 2014 paper *Effects of germination on the proximate composition, antioxidant property, and eating quality of brown rice*, published in the *Philippine Agricultural Scientist*.

Germination is done by "soaking the brown rice kernel in water for 24 hours until the sprout emerges". Several studies have reported that germination has gained acceptance in improving the nutritional and eating qualities of rice.

Bulatao and Romero had white (Rc13 and Rc160) and pigmented (Ominio [black rice] and Chor-chor-os [red rice]) rices as their samples.

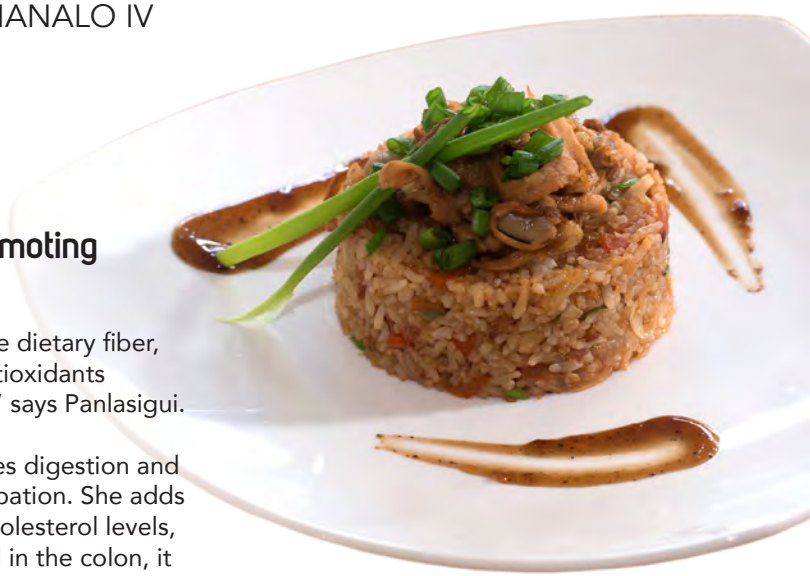
Their study showed that total carotenoid and vitamin E contents of all brown rice samples increased upon germination. And, probably not known to many, black rice samples had the highest antioxidant content!

They likewise found that germinated brown rice had shorter cooking time and much softer cooked rice than white rice. Certainly, this brings germinated brown rice closer to white rice as far as eating and cooking qualities are concerned.

"Germination is a simple way to improve the cooking and eating qualities of brown rice with minimal effects on its nutritional and antioxidant properties," conclude Bulatao and Romero. •

Brown Rice: Nutritionist Endorses

JAIME A. MANALO IV



Next to being singers, Filipinos are reputed the world over as frequent eaters. Aside from the three square meals, we do have morning and afternoon snacks, and often, another one for midnight. All these foods have loads of carbohydrates, fats, and what-have-you. We are less than being health-conscious.

The 2013 National Nutrition Survey notes that 3 of every 10 adult Filipinos are obese and overweight—mostly among ladies. Surely, this doesn't add glamor to a Pia Wurtzbach country!

Even worse, the World Health Organization projects that by 2030, the Philippines will have close to 8 million diabetics, making it the third country with the highest *Diabetes mellitus* case in the Western Pacific Region, next to China and Japan.

So, what do we do?

Dr. Leonora N. Panlasigui, dean of the School of Nutrition of the Philippine Women's University, recommends eating brown rice especially for the hypertensive adults, obese, and diabetics.

Panlasigui says it is high time "we educate Filipinos about brown rice". She adds while white rice is beautiful, brown rice is far richer nutrient-wise than white.

More health-promoting properties

"Brown rice has more dietary fiber, polyphenols, and antioxidants particularly rice oils," says Panlasigui.

Dietary fiber improves digestion and helps prevent constipation. She adds it also has "serum cholesterol levels, and when fermented in the colon, it produces short-chain fatty acids, which are beneficial to health".

An article in the *American Journal of Clinical Nutrition* titled *Polyphenols: Food sources and bioavailability* notes that polyphenols "are the abundant micronutrients in our diet; they help prevent cancer and cardiovascular diseases".

Rice bran oil, on the other hand, is said to be a rich source of antioxidants, which are necessary in fighting certain forms of cancer.

Managing diabetes, losing weight

For diabetics, brown rice is highly recommended.

In a 2006 journal article, Panlasigui and Lilian U. Thompson of the University of Toronto noted that "brown rice is a more health-beneficial food for diabetics and hyperglycemic individuals than white rice".

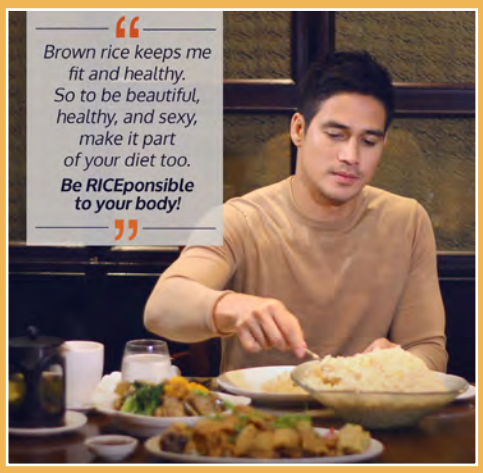
Brown rice has lower glycemic index (GI) than white.

GI ranks carbohydrates from 0 to 100 based on the level in which they raise blood sugar level after eating according to the University of Sydney-based Glycemic Index. It adds that "low-GI diets have been shown to improve glucose and lipid levels in people with diabetes types 1 and 2".

For weight management, brown rice shows promise as well.

"Brown rice gives more feeling of satiety, so you eat less," says Panlasigui. As a nutrition consultant, she has long been recommending brown rice to overweight hypertensive patients. "We should start feeding growing children with brown rice," says Panlasigui.

Dr. Panlasigui was a recipient of the Outstanding Professional in Nutrition and Dietetics Award by the Professional Regulations Commission. •



Piolo Pascual

Filipino film and television actor, musician, model, and producer

Source: www.philrice.gov.ph

Lucy Torres-Gomez

Filipina actress, model, television host, and Leyte politician

"I really love brown rice. It is my rice at home."

Source: www.philrice.gov.ph

Hugh Jackman

Actor, producer, musician

Seems, Wolverine is on the brown rice wagon, too. For lunch, he eats brown rice and yams.

Sources: www.livestrong.com and www.allaboutjackman.com

The stars on starch

COMPILED BY SHEREEN P. RAZON AND MELCHOR A. DIAMSAY

What do Piolo Pascual, Lucy Torres-Gomez, Hugh Jackman, and other celebrities have in common? They are particular when it comes to starch – they prefer brown rice.

Noel Cabanqon

Musician

"With the increasing number of people falling to the poverty line and getting hungry everyday, we Filipinos can do something simple to address this. With our current situation, consuming brown rice is ideal because it gives you enough nutrients that you need. If only brown rice becomes accessible to all by increasing the volume of its production and keeping its price competitive, then this will help address the problem of food security in the country. If farmers are able to produce more rice then this will enable the country to be rice-self-sufficient."

Sources: www.adventureras.com and beta.philstar.com

Serena Williams

Professional tennis player

Her tennis prematch meal always includes brown rice, fish or chicken, and "non-gassy vegetables as part of a Mediterranean-style diet, which her trainer devised for her years ago. She even has one sushi recipe named after her (by her trainer), the 'Serena sushi' that contains crab, brown rice, and cucumber.

Sources: www.nytimes.com and www.gettyimages.com

Ben Affleck

Actor, screenwriter, producer

In addition to very rigorous workout plans, Affleck followed Rehan Jalali's "Six-Pack Diet Plan," which recommends eating six to seven small meals a day, according to BodyBuilding.com. For each meal, Affleck had to eat 45% carbs (brown rice, sweet potatoes, broccoli), 35% lean protein (lean steak, chicken breast, egg whites), and 20% essential fats (almonds, flaxseed oil).

Sources: www.livestrong.com and www.usmagazine.com

CARLO G. DACUMOS

Eat brown rice for goodness' sake

JOHN GLEN S. SAROL

Jun Casita, 43, of Nueva Ecija has a diabetic mother. He was only 28 when found diabetic as well. But despite professional and friends' advice to minimize his white rice intake and instead eat brown or unpolished rice to manage his disease, he did as he pleased. Today, his uncontrolled blood sugar has complicated into kidney failure that requires dialysis twice a week, which costs as much as P4,000 per shot.

Ours is one of the world's top 15 countries in terms of diabetes prevalence, says the International Diabetes Federation.

"We feel that good health is not enough reason to eat brown rice. Thus, the #BROWN4good challenge that promotes not just the goodness of brown rice to the health of the consumers, but its benefits for others as well," explained PhilRice's Hazel Antonio, Director of the DA's Be RICEponsible Campaign.

Good for the farmers

Government data show that farmers comprise 38.3% of the country's poorest sectors. The PhilRice Socioeconomics Division says a rice farmer earns only about P50,000 a year.

"But by milling their produce into brown rice, farmers can gross an additional P10,000 per ton of paddy rice as compared to selling it at farmgate. It could at least double their income," said Antonio.

The BROWN4good project links farmers to food establishments and retailers to help them market their brown rice at a higher price while also allowing consumers to avail of it at an affordable price. The Bohol Farmers Association, for one, is being linked to the Bohol Association of Hotels, Resorts, and Restaurants. This increases the income of farmers and lowers the

price of brown rice, which is hoped to whet more appetite for the whole-rice commodity.

"It is a win-win situation. The farmers earn more while our consumers save. But more than saving, every time they eat brown rice from the project's partner food establishments or retailers, they help themselves become more healthy, and our farmers improve their lives," Antonio said.

Good for the country

Each Filipino eats about 4.5 cups of cooked rice daily. That is why in 2008, people panicked when a rice crisis hit the world, catapulting our country as then the world's largest importer of rice. The poorest Filipinos were badly affected since rice accounts for 60-65% of their calorie intake. No wonder, rice self-sufficiency is always a government target.

Researchers say rice self-sufficiency is another goodness that could result from brown rice consumption. Its 10% higher milling recovery means an additional rice supply of 1 cavan for every 10 cavans of paddy rice.

In 2014, our self-sufficiency requirement was 21.5M mt of *palay* but we only produced 18.97M mt, equivalent to 12.33 M mt of white rice at 65% milling recovery. We were 1.67M mt short of the 14M mt of white rice that we needed. But had all of our produce been milled into brown rice, which has 75% milling recovery, we could have extracted 14.23M mt – more than our self-sufficiency figure.

"This is why every time you eat brown rice, you are helping our country get closer to our rice self-sufficiency quest. That means you are also helping ensure that all Filipinos, even the poor, can afford their favorite staple— rice," Antonio said.

Good for the hungry

According to the 2015 Global Hunger Index, we ranked 51st among 117 countries that faced a serious level of hunger. But even more alarming than having not enough food is the hardly manifesting "hidden hunger".

This is why every time you eat brown rice, you are helping our country get closer to our rice self-sufficiency quest. That means you are also helping ensure that all Filipinos, even the poor, can afford their favorite staple— rice

- HAZEL ANTONIO

Says the World Health Organization, hidden hunger occurs in people who lack vitamins and minerals because the quality of their food does not meet their nutrient requirements for growth and development. Hidden because afflicted people are not aware of it. Some 2 billion people in the world suffer from this malady, mostly in low-income families.

"With the #BROWN4good challenge, these people could also be helped when they eat brown rice," explained Antonio.

The challenge is a social media promotion focused on the four forms of goodness from brown rice as described above.

How the challenge proceeds: cook at home or order brown rice from your favorite restaurant; snap a photo of the meal; post it on social media; caption it with **#BROWN4good** with your region; tag friends to challenge them to do the same; and enjoy brown rice up to the very last grain.

For every hashtag, the Department of Agriculture will donate one cup of raw brown rice to charities to help feed less fortunate Filipinos. DA's goal is to donate at least a million cups of brown rice to charities nationwide.

"By donating healthy rice to them, we could help minimize hidden hunger among our less fortunate citizens," Antonio said.

"With this, every time they eat brown rice, they would also be feeding another person who can be literally hungry and/or with hidden hunger".

Four goodness in a cup

Given all this, eating brown rice would be eating for four faces of goodness – being healthy, helping the farmers, helping our country, and feeding the less fortunate Filipinos.

The BROWN4good project hopes that these manifestations of goodness would give every Filipino more compelling reasons to eat brown rice for good, to make it a habit.

"Surely, you can help yourself by eating other healthy foods; you can help the farmers by buying their other produce; you can help the country become rice-self-sufficient by not wasting rice; and you can help feed the hungry by giving them food. However, wouldn't it be thrilling to do all four by simply doing one thing?" Antonio concluded.

So if your health is not enough reason to eat brown rice, consider the many other people who would benefit from your single act. By then, maybe you would develop a love for brown rice just as the love you have for others. •

Yummy brown

Gift yourself with a guilt-free, mouth-watering, and unusual treat. Accustom your palate to brown rice. Check these easy-to-prepare and inexpensive brown rice recipes:

COMPILED BY CHRISTINA A. FREDILES
PHOTO BY JAYSON C. BERTO

Brown Rice Pancakes

INGREDIENTS:

- ½ kilogram brown rice, raw
- 25 grams baking powder
- 5 pcs eggs
- 250 grams sugar

PROCEDURE:

Soak brown rice in water overnight. Grind brown rice. Mix brown rice, eggs, baking powder, and sugar well. Fry like pancakes.

Source: Rice Chemistry and Food Science Division
*Recipe modified by Melchor A. Diamsay of Be RICEponsible Team

Pinawa Fritters

INGREDIENTS:

- 1 cup brown rice, cooked
- 150 grams cooked chicken, flaked
- 1 clove garlic, crushed
- 1 small onion, minced
- 1 small carrot, minced
- 1 small bell pepper, minced
- salt and pepper to taste
- 1 tablespoon vegetable oil
- lumpia wrappers
- 1 cup vegetable oil for frying

PROCEDURE:

In a saucepan, saute garlic, onion, and chicken. Add carrots and bell pepper and season with salt and pepper. Simmer until cooked. Drain excess oil. Combine sauteed chicken-vegetable mixture and cooked brown rice, and use it as a filling. Put a tablespoon of filling at the center of lumpia wrapper, roll up, and seal with water. Heat vegetable oil in a frying pan. Deep-fry rolls until golden brown. Drain excess oil using paper towels.

Source: PhilRice. (2005). Rice Recipes in the Philippines.

Triple Chocolate Champorado Bar

INGREDIENTS:

- 2 cups brown rice, washed
- 6 cups water
- 1 cup rolled oats
- ½ cup cocoa powder, dissolved in water
- ½ cup hot water
- 1 cup white sugar

GARNISH:

- ½ cup fresh milk
- ½ cup chocolate syrup
- ¼ cup mini chocolate kisses (or chocolate chips)

PROCEDURE:

In a sauce pan, combine rice and water. Bring to a boil. Stir constantly for 15-20 minutes or until rice is soft. Add oats and cocoa mixture. Blend well. Continue cooking. When the cooking mixture is almost dry, season with sugar and blend well. Mold the mixture using a polvoron molder. Place in individual containers. Pour milk and chocolate syrup on top, then sprinkle with chocolate kisses.

Makes 28 servings, 3 pieces per serving

Source: Food and Nutrition Research Institute

Brown Rice Ala Spaghetti

INGREDIENTS:

- 5 cups brown rice, cooked
- ¼ cup white onion, chopped
- ¼ cup garlic, crushed
- ½ cup pork, ground
- ¼ cup green bell pepper, cubed
- ¼ cup red bell pepper, cubed
- 1 small carrot, finely chopped
- 115 grams of button mushroom, sliced
- 250 grams sweet Filipino style spaghetti sauce
- 3 tablespoons vegetable oil
- salt and pepper to taste
- Parmesan cheese, grated

PROCEDURE:

In a pan, sauté onion, garlic, pork, carrots, bell peppers, and mushroom. Season with spaghetti sauce, salt, and pepper. Pour sauce over brown rice and top with cheese.

Source: www.rappler.com
*Recipe modified by Melchor A. Diamsay of Be RICEponsible Team

CARLO G. DACUMOS

BROWN RICE Nation

SHEREEN P. RAZON

Why we love it, and why you, too, should!

We've asked ordinary folks from various professions what they love about the good ol' unpolished grain, and why they all made the switch — for good. Welcome to the brown rice nation.

www.facebook.com

Teresita Ramos, 52
Provincial Nutrition Officer
Laguna

My kids and I have been eating brown rice since 2001. Since I'm the lead advocate of brown rice consumption in our nutrition program in Laguna, it only follows that I should be the first to practice it. It's a personal advocacy for me, and I support the Be RICEponsible campaign.

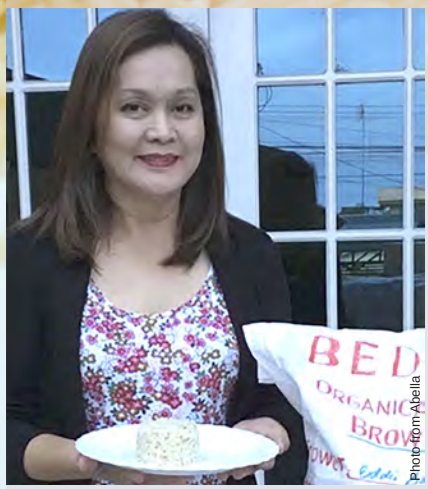
I noticed it was easier for us to lose weight compared to when we were eating white rice. With white rice, we eat more and feel hungry easier. With brown rice, we quickly feel full and would not crave for snacks that much.

Photo from the Nakashimas

Mary Ann, 43, with husband Masaya Nakashima, 40
Entrepreneur, Architect
Makati City

Like most Filipinos, I feel like I can't live without rice. But I also want to take care of my body so I switched to eating a better staple, a better rice. Thanks to several articles I read online, I discovered fiber-rich brown rice.

Brown rice could be my secret to helping maintain a lean frame and flat tummy, but I also make it a point to do simple workouts from time to time. When my husband and I got married last year, I introduced him to my kind of rice. He liked it and he also has a flat tummy like me. We only eat rice twice a day, one cup each for lunch and dinner, and we're good to go.



Marissa Abella, 60

Davao City Councilor, Committee Chair on Agriculture and Food

I found out I was diabetic some time in 2010. So I did some research on what food to best eat and avoid. Once I read in the newspapers that brown rice is good for people like me because it has lower glycemic index compared to white rice, I shifted to it straightaway. In time, my whole family began eating brown rice regularly, too.

With brown rice, I was able to maintain a healthy 110-120 fasting blood sugar (FBS) level. But there came a week when we ran out of brown rice supply that our immediate recourse was to eat white rice. Since I constantly monitored my blood sugar, it was easy for me to note the changes in my body resulting from my food intake. Upon eating white rice again, my FBS shot up riskily to 150-160. When we restocked with brown rice, my FBS dropped back to normal.

Lee Jong-Taek, 61

Director, Korea Project on International Agriculture (KOPIA) Center
Suwon, South Korea

I've been eating brown rice consistently since 2012. More Koreans eat white rice or mixed grains but I personally prefer brown rice because it is nutritious and goes well with my favorite kimchi side dish and soup. Before, I used to eat only unpolished Korean rice varieties, but when I was assigned to lead the KOPIA Center in the Philippines, I became acquainted with PhilRice's NSIC Rc160 variety, which I would say is also comparable in quality and taste to what I have been used to eating.

I eat little because I get full faster when eating unpolished rice, hence my tummy does not bulge. I usually eat rice in moderation and pair it with lots of vegetable-based side dishes.

I like my rice soft. For brown rice, I achieve this by soaking it in my rice cooker 2-4 hours before cooking. The process also produces perfectly cooked grains without the nasty burnt bottoms and edges.

Venus Vicente, 28

Private nurse
Sampaloc, Manila

When I was in high school, my dad was diagnosed with diabetes. And as fate would have it, my mom soon followed suit. Being a professional in the medical field, I could not help but recognize the many health risks I face given my uninspiring medical history. I was 23, overweight, and scared. I understood then I had to make changes in the way I eat if I wanted to reduce my chances of being a diabetes sufferer in the future.

I became extra mindful of things that I eat, choosing foodstuff with lower glycemic index. I studied the available literature and learned about brown rice. I taught myself to refrain from eating white rice and bread, and switched to brown rice and whole-wheat bread, instead.

At first, I found it difficult to source brown rice. Luckily, I found a mall nearby that sells brown rice, but at P112 per kilo! I then tried looking around public markets and finally found a store that sells for half the price.

I shared what I've learned to my parents. And soon, all of us became brown rice devotees. When I have a family of my own, I want my children to eat brown rice, too.

SONNY P. PASIONA

Rice policies for health and wealth

SONNY P. PASIONA

No law stops us from eating rice. Nutritionists don't even think about it. *Kanin pa more*, you insist? Give in to your tummy's delight, but let it be known that certain policies and advocacies marshal the production and consumption of rice. This is not to starve us, of course, but to promote food security and our health!

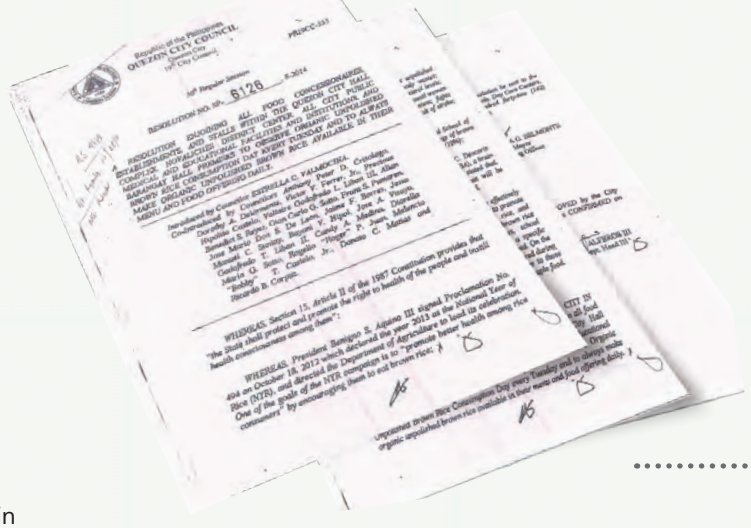
Under the 1987 PH Constitution, the State shall "protect and promote the right to health of the people and instill health consciousness among them." Production and consumption of healthier food staples are covered.

But as early as 1977, then Pres. Ferdinand Marcos had ordered the improvement of the nutritional value and milling recovery of rice by prohibiting over-milling, thereby engendering a balance of regular-milled and unpolished or brown rice (B-Rice).

With the recently discovered health risks blamed on excessive rice consumption, advocacies to address it have taken shape fast.

One of the goals of the 2013 National Year of Rice was to promote B-Rice as a healthier alternative to white rice. Cong. Linabelle Ruth Villarica of Bulacan then authored the Brown Rice Act of 2013 to "promote the consumption of brown rice through food and retail establishments as an alternative to white rice."

The birth of DA's Be RICEponsible Campaign in 2014 expedited the call for responsible consumption of rice and healthier alternatives. Since then, the campaign has been calling on local government units (LGUs) to institute policies endorsing B-Rice consumption.



The Quezon City government is one of the frontrunners in this endeavor. An August 2014 resolution enjoined food establishments in the City to observe Tuesdays as organic brown rice consumption day, and to make it prominent in their menus.

Other areas with approved B-Rice resolutions are the cities of Cebu, General Santos, Puerto Princesa, and San Jose, and Dingle in Iloilo. Those in their food business sectors must adhere to the policy.

Business and advocacy

Serye, a restaurant and café in Quezon City, has been walking the talk of promoting B-Rice long before policies were laid out. But when the resolution took effect, the demand for B-Rice was boosted.

"When people know we offer brown rice, it becomes their choice especially among the elderly and health-conscious customers," said Alvin Lim, restaurant owner.

Albeit patronage is low at 5-10% of customers, Lim believes in its health benefits making it his personal advocacy, too.

"At home, we've also shifted from white to brown rice," Lim shared, but advising not to force children to eat brown rice. Starting off at 50:50 ratio of white and brown rice, his child eventually got used to more B-Rice and is now reaping its benefits — more vitamins and easier digestion to name a few.

Uncoiling policies

At *Serye*, a cup of brown rice is served at P55, as against only P40 for white rice. Lim admits that price is a pull factor on B-Rice patronage.

With the sustained efforts of DA-PhilRice, the shift to B-Rice is getting more feasible. Beginning in April, B-Rice was made more accessible and affordable in Bohol. From its normal price of P50-80 per kilo, quality B-Rice is now retailed at P37/kilo in the province.

> With the policies from LGUs, lower price through the farmers, and accessibility through the food industry, I am confident that B-Rice would be served in many homes again
>
> - HAZEL V. ANTONIO

"The demand for brown rice has been increasing because people's appreciation of it has been growing, too. But its low accessibility and high price are slacking its market," said Hazel Antonio, director of DA's Be RICEponsible Campaign.

Antonio also said that to facilitate adherence to the local resolutions, her team is exhausting efforts to make B-Rice cheaper and more visible while also benefiting the farmers. "This could not only pave the way for better nutrition but also help drive the economy forward."

Concerted efforts

While policies now support the B-Rice advocacy across the country, concerted efforts among the government, the private sector, the farmers, and the consumers are still of high importance.

The Be RICEponsible Campaign has been doing rounds among LGUs to gather support both for policy direction and implementation.

The campaign has also tapped the Hotel and Restaurant Association of the Philippines (HRAP) and its chapters in the regions, which have resonated the call for B-Rice availability in food establishments. Lim, the HRAP public relations officer, said that any effort to promote healthier alternatives to consumers is desired.

"With the policies from LGUs, lower price through the farmers, and accessibility through the food industry, I am confident that B-Rice would be served in many homes again," Antonio said.

Making the shift

The adulterated Filipino culture views white, such as complexion, as more glamorous and presentable than our own natural brown color. Along that line, B-Rice can be seen as inferior to white rice.

To fuel a remarkable shift both in perspective and preference, lawmakers and enforcers need to look at B-Rice not just as an alternative but as part of our cultural orientation. Food security issues, socio-economic studies, and health factors associated with it can influence policymaking. Similarly, policies should also be able to reorient the mindsets of consumers.

When choosing between white and brown rice, Filipinos should learn to attach value not just by looking on color but by digging deep down to the content. That, in essence, would make the difference — in the people's health, and the people as the country's wealth. •

Be a color lover

HANAH HAZEL MAVI B. MANALO

The more color on your plate, the healthier you. Mix and match your rainbow-colored vegetables and fruits with pigmented rices, according to a PhilRice food scientist.

Dr. Marissa Romero, High-Value Products program leader, said that pigmented rice, which belongs to specialty rices, is a rich source of antioxidants, including anthocyanins. The program aims at exploring rice, rice-based, and other products from the rice environment to help increase the income and improve the nutritional status of the rice-farming community.

CARLO G. DACUMOS

Anthocyanins are the pigments found in cereals, fruits, and vegetables that act as antioxidant. Antioxidants protect the body from damage caused by free radicals that are linked with high incidence of cardiovascular diseases, cancer, and diabetes.

Purple and Red Rices

Pigmented rice varieties Ominio (purple) and Chor-chor-os (red) contain high amounts of antioxidants, according to Romero. Cultivated once a year in Mt. Province and other upland or highland areas, these two rices are interesting research subjects of food scientists at PhilRice due to their unique properties.

Purple rices appear as black due to the intense pigmentation of anthocyanins in their bran layer, the fiber-rich coat that encases the grain. Romero said that black rice, when polished and cooked, looks purple.

Pigmented rices with high anthocyanin contents exhibit strong antioxidant activity. Although lower in anthocyanins compared to black rices, red rices are also good sources of antioxidants due to the other phytochemicals they contain.

Henry Mamucod, Romero's colleague, tells us that most pigmented rices are traditional varieties. Our breeders use them as genetic materials in the development of modern pigmented rices for their health-promoting properties. A modern PhilRice-bred red rice variety is NSIC Rc19 or Malagkit 4.

Unpolished vs Polished Pigmented Rices

Since the health-promoting components of pigmented rice are significantly lost during polishing, Romero said it should be consumed in its unpolished form for maximum health benefits.

Romero and her team found that unpolished pigmented rices have more anthocyanins than the polished. Anthocyanins are concentrated in the bran layer of unpolished rices, aside from high levels of healthy oil, dietary fiber, protein, calcium, and iron.

The anthocyanins in pigmented rices are a healthy addition to the known nutrients of rice that include carbohydrates, proteins, fats, vitamins, and minerals. Therefore, let's eat "colorfully". •

Polishing wastes nutrients

Nutrients	% Reduction
Crude Protein	2.33-16.49
Crude Ash	0.00-56.69
Crude Fat	31.91-69.49
Dietary Fiber	39.19-79.70
Calcium	4.14-60.00
Iron	25.00-90.80
Total Anthocyanin Content	7.69-93.89
Total Phenolic Content	4.04-95.01

Source: Romero, M.V., Anies, A.J., Corpuz, G.A., Mamucod, H.F., and Corpuz, H.M. (2015). *Beyond the Colors of Traditional Pigmented Rice Varieties*. Poster presented during the 28th National Rice R&D Conference, Nueva Ecija.

Pigmented treat

Suman y Cuyunon

Suman y Cuyunon is a native delicacy, particularly in Cuyo, Palawan. The use of the pigmented rice Pirurutong in cooking makes it different, extra delicious, and nutritious.

PHILRICE PHOTO

INGREDIENTS:

- 3 cups Pirurutong (raw purple rice)
- 3 cups water
- 2 cups brown sugar
- 2 cups coconut milk
- pandan leaves
- lemon rind

PROCEDURE:

In a rice cooker, put the purple rice, 3 cups of water, and pandan leaves. Cook until Pirurutong is done. Set aside. In a medium saucepan, put 2 cups of coconut milk and let it boil for a minute. Add 2 cups of brown sugar and stir until it is caramelized. Add cooked Pirurutong and lemon rind. Stir until rice becomes sticky or as desired. Transfer to a platter and let it cool. Cut it into desired shape and top it with *latik* before serving.

Source: PhilRice. (2005). Rice Recipes in the Philippines.

GO with the blends

MYRIAM G. LAYAOEN
AND ANNA MARIE F. BAUTISTA

CARLO G. DACUMOS

Often said is two are better than one. While this generally applies to our mental and physical exertions, it can also refer to what rice and other staple foods, when combined, can do for us.

Most Filipinos are likely to hesitate replacing rice with other staples because of its eating quality, nutritional properties, or the sheer satisfaction they get from consuming it. Some could even profess that a meal without rice is not meal at all. This is where rice blends hope to be noticed.

Let's define rice blend as the mixture of rice and another complementing staple. Blending them enhances the nutritional value of rice while preserving its eating quality, even "extending" its quantity. Rice blend is a popular dish in other countries, especially Korea.

Heeding the call of DA's Be RICEponsible campaign to eat healthier rice, PhilRice researchers explored the feasibility and consumer acceptability of incorporating other staples with rice. Among other purposes, they were after promoting other food staples as a way of reducing rice consumption that could lead to food sufficiency.

PhilRice food researcher Henry Mamucod and team studied nutrient-rice blends to determine cooking quality, sensory characteristics, consumer acceptability, and the nutritional benefits of their selected combinations — rice-*adlai* and rice-corn. The study on nutrient-rice blends is under the program *dubbed as High-Value Products from Rice and it's Environment* (HVP).

With the "nameless" staple

Among the energy-dense local food staples, *adlai* or '*katigbi*' is the least known crop. It is grown and eaten in Zamboanga del Sur, the Bicol Region, Batangas, Romblon, and Isabela, among other places. The nutritional value of *adlai* has been reported to be comparable to or even better than rice. Analysis at the Food and Nutrition Research Institute revealed that *adlai* approximates the amount of energy from rice at 356 kilocalories per 100 grams, but adlai protein and total fat contents are higher.

Rice blend is the mixture of rice and another complementing staple. Blending them enhances the nutritional value of rice while preserving its eating quality, even "extending" its quantity.

"We chose *adlai* owing to its very similar characteristics with rice. True enough, our sensory evaluation showed that rice eaters find the rice-*adlai* blend acceptable," Mamucod tells us.

They tested three *adlai* varieties—*ginampay, gulian,* and *tapol*— and ginampay was the most acceptable variety for blending.

Rice and *ginampay* at 50:50 ratio increased the protein composition of the blend from 8.97 to 11.52%, and the healthy fat content from 0.32 to 1.02%.

"These shoot-ups in nutritional value are significant enough to transform our white rice into a better option," Mamucod affirmed.

The blend provided the same amount of energy from pure rice, even if *adlai* has lower carbohydrates. Ash and dietary fiber were not affected.

Mixing more *ginampay* with rice prolonged cooking time by 5-6 minutes. The group recommended NSIC Rc160 and Rc218 for blending with *ginampay* to strike better aroma, gloss, tenderness, smoothness, and taste without off-odor.

"The 50:50 ratio provided the consumer the same eating satisfaction as pure rice. More than being an excellent source of carbohydrates, the blend also provides higher nutritional value," Mamucod said.

With corn

The DA sees corn second to rice as our most important crop with an average production growth of 5.1% from 2010 to 2015.

In the study, Mamucod's team paired rice with the white variety of Quality Protein Maize (QPM). When processed into grits, QPM mimicks the taste of rice. The UPLB-Institute of Plant Breeding claims it is superior to ordinary white corn in terms of dietary fiber and minerals. It also contains two essential amino acids, lysine and tryptophan, essential to building proteins that help the body repair cells and make new ones.

Rc160 and Rc218 blended best with corn grits. Taste-test participants were satisfied with the aroma, color, gloss, smoothness, and taste of the blend. Its nutritional profile is being evaluated.

"The QPM variety is known for its low glycemic index (GI), making the rice-corn blend a potential substitute staple for consumers who want healthier rice," Mamucod explained.

GI measures the ability of a food to raise blood glucose level: the higher the GI, the more sugar it supplies. The sensory acceptability ratio of the rice-corn blend is pegged at 70:30 mix.

Optimizing results

"We want to convey the results from the laboratories to various stakeholders and partners. We need government investments to nurture the efforts of our stakeholders," Dr. Marissa Romero, HVP pogram leader, emphasized.

The team hopes to help encourage more farmers to produce *adlai and* QPM corn. They are also hunting for food manufacturers who will mass-produce rice blends ready to be sold as instant food.

So, blend in! Make rice blends the new trend! •


JOHN GLEN S. SAROL

Rice becomes micronutrient-richer

CHARISMA LOVE B. GADO, JAYSON C. BERTO,
AND JUNGIE Q. AMACANIN

Rice is our primary source of nourishment. It has always been at the top of our diet long before we were born. The 2013 food consumption survey by the Food and Nutrition Research Institute (FNRI) ranks rice first, followed by salt and cooking oil.

Rice is an excellent source of carbohydrates, a macronutrient that provides energy for the body. However, it has not much micronutrients that are necessary in building, repairing, and maintaining tissues, and in regulating body processes. Micronutrient deficiency or hidden hunger presently afflicts 2 billion people on earth or one in three persons.

Being our staple food, rice can curb malnutrition especially in areas where people have no means to diversify their diets, thanks to biofortification.

The World Health Organization (WHO) describes biofortification as the practice of deliberately increasing micronutrient contents (i.e. vitamins and minerals) in a food crop through agronomic practices, conventional plant breeding, or modern biotechnology. As against conventional fortification, nutrient levels are increased during plant growth (biological trait) rather than during processing of crops. As WHO sees it, biofortification presents a way to reach populations where supplementation and conventional fortification activities may be difficult to implement.

Iron

The power of visualizing could be stymied when a child's first 1,000 days of life are saddled with iron deficiency anemia (IDA).

IDA incidence in the country is decreasing but Dr. Riza Abilgos-Ramos of our Rice Chemistry and Food Science Division says it is high at almost 48% in children aged six months to one year in the middle, poor, and poorest families. Six-month to five-year-old children also experience moderate IDA.

BIOFORTIFICATION

The World Health Organization (WHO) describes biofortification as the practice of deliberately increasing micronutrient contents (i.e. vitamins and minerals) in a food crop through agronomic practices, conventional plant breeding, or modern biotechnology.

Inadequate supply of iron can delay normal infant motor and mental functions; increase risks for preterm babies who are more likely to have health problems or die in the first year of life; cause fatigue that impairs the ability to do physical work; and weaken memory.

Iron-dense rice is then seen as the most economical and sustainable complementary solution to the moderate-to-high prevalence of IDA in the country.

Probably unknown to consumers, 2008 rice variety NSIC Rc172 (MS 13) contains 21 mg/kg iron enough to satisfy an average adult's iron need if eaten as brown rice; only 2-3 mg/kg as white rice.

Ramos stresses that iron-dense rice contains no synthetic minerals, hence is a better alternative than iron-fortified rice. Excessive fortificants may also cause overdose, which does not occur in iron-dense rice as the body only converts the amount of iron that it needs. Iron-fortified rice also discolors through time.

However, PhilRice senior plant breeder Emily Arocena says that despite its high iron content, Rc172 is not widely grown due to its inferior agronomic performance. Ramos says more lines will be tested for high iron content bio-availability.

Zinc

Zinc-dense rice awaits release as a variety by the National Seed Industry Council to help alleviate zinc deficiency in people.

Signs and symptoms related to zinc deficiency include growth retardation, diarrhea, hair and appetite loss, eye and skin lesions, white spots, and pregnancy problems.

The 2008 FNRI National Nutrition Survey (NNS) saw zinc deficiency in pre-school children (21.6%), school children (30.8%), adolescents (28.9%), adults (31.0%), elderly (28.4%), and in pregnant (21.55%) and lactating women (39.7%). Bangladesh, India, and Pakistan already have high-zinc rice varieties.

Based on National Cooperative Test results, the IRRI-developed zinc-dense line averaged 4.7 t/ha across seasons with a maximum yield of 8.7 t/ha. It has a 20% yield advantage over Rc172, the check variety, Arocena says.

The line has 19.6 ppm zinc and 3.1 ppm iron contents, which meet the micronutrient requirements of our body when consumed over time.

Aside from its nutritional value, the line also passed grain quality standards: headrice (Premium, 58%), milled rice (Premium, 72%), amylose content (Intermediate, 18%), and long and slender grains. It is more acceptable both in cooked and raw forms than Rc172.

Vitamin A

Less commonly known than iron and zinc deficiencies but more significant from a public health standpoint is vitamin A deficiency (VAD).

VAD among pre-school children (6 months to 5 years old) increased from 15.2% (1.7 million) in 2008 to 20.4% (2.4 million) in 2013. In addition, a number of pregnant (9%) and lactating mothers (5%) are still suffering from VAD, says the 2013 FNRI NNS. These people are at higher risk to infection and common diseases due to weaker immune system that may result in death when left untreated. VAD also leads to temporary and permanent blindness.

Research is ongoing to develop Golden Rice as a complementary food-based approach to existing VAD interventions. Golden Rice is a new type of rice that contains beta carotene, which is converted into vitamin A inside the body as needed (i.e., no risk of overdose) and gives the grain its golden color. It is genetically modified and expected to be grown just like ordinary rice. A 2009 research published in the American Journal of Clinical Nutrition said consumption of one-cup Golden Rice could provide half of an adult's daily vitamin A requirement.

Recently completed studies attest to Golden Rice's safety, with comparable yield to popular Philippine rice varieties. However, regulatory approvals (i.e., for food/feed and for environment/health) are needed before Golden Rice can be commercially released and included in the toolbox to address VAD.

High-nutrient rice could be an effective way to nourish a rice-dependent population preventing the increase in hidden hunger. •

Keeping the Rice Plant Healthy

CHRISTINA A. FREDILES

JAYSON C. BERTO

ORGANIC FERTILIZERS		INORGANIC FERTILIZERS
Animal or plant products that are completely decomposed	—	Petroleum products, rocks, or even organic sources
Supply the micronutrients	—	Provide the macronutrients
Replenish depleted micronutrients in the soil; increase microbial population and diversity; help improve soil structure	—	Induce better growth and promote more tillers, panicles, and grains resulting in higher yield
Nutrients from these fertilizers are converted first into inorganic form before plants can absorb them.	—	Nutrients from these fertilizers are easier absorbed by the plants

Some people claim rice fed with inorganic fertilizer is harmful for human consumption and to the soil as well. Well, PhilRice says otherwise.

"Inorganic fertilizer-fed rice is not harmful to humans," declares senior agronomist Evelyn Javier. She advises farmers to combine organic and inorganic fertilizers to grow healthy rice plants. "Both fertilizers complement each other. Inorganic provides the macronutrients while the organic fertilizers supply the micronutrients essential to the plants and soil." Rice plants absorb nutrients only when they are in their pure element or inorganic form regardless of the fertilizer source.

> Being the food of microorganisms in the soil, organic fertilizers increase microbial population and diversity. These small creatures efficiently transform any applied fertilizer into inorganic form ready for plant absorption.
>
> -EVELYN JAVIER

Organic for healthy soil

Organic fertilizers are animal or plant products that are completely decomposed. They have a soil-like texture and are free from plant and animal pathogens.

Javier asserts organic fertilizers replenish depleted micronutrients in the soil. However, they take some 30 days to decompose and mineralize before they can be used by the plant, specifically rice straw. Seven days are needed to decompose animal manure, vermicompost, or commercial organic fertilizer. They provide little amounts of macronutrients such as nitrogen, potassium, phosphorus, and others.

Being the food of microorganisms in the soil, organic fertilizers increase microbial population and diversity. These small creatures efficiently transform any applied fertilizer into inorganic form ready for plant absorption, Javier explains.

Organic fertilizers also help improve soil structure, thereby increasing its water-holding capacity. It provides more space for oxygen exchange and reduces root impediments, thus allowing them to grow longer and have better access to water and nutrients.

Javier adds that such fertilizers are better applied in aerated (exposed to air) soils than in flooded land because organic matter coming from the fertilizers mineralizes faster in such soils. Accumulated organic fertilizer in flooded soils increases soil organic matter but its mineralization is very slow, hence is hardly reduced or depleted. This makes the soil very soft, hard to till by machine, and may develop into peat soils if water is not drained.

Inorganic for faster nutrient absorption

Inorganic fertilizers are made from petroleum products, rocks, or even organic sources. These are refined into their pure state, which controls their availability and breakdown. As such, nitrogen, potassium, calcium, and sulfur from these fertilizers are easier absorbed by the plants than those from organic fertilizers.

Inorganic fertilizers induce better growth and promote more tillers, panicles, and grains resulting in higher yield. This growth is fuelled by higher consumption of macronutrients and absorption of more soil micronutrients such as iron, zinc, and others," Javier said.

"It is true that improper application of inorganic fertilizers contributes to nutrient loss. These should therefore be applied in the right kind and amount, at the right time," Javier underscored. •

New Knowledge Products

JAYSON C. BERTO

Books

Competitiveness of Philippine Rice in Asia, authored by Flordeliza Bordey, Piedad Moya, Jesusa Beltran, and David Dawe, offers answers to burning questions about the plight of the local rice industry, and provides insights on improving the competitiveness of Filipino rice farmers. It supplies information on comparative yields, input uses, and crop management practices of rice farmers in representative irrigated areas in the Philippines, China, Indonesia, India, Thailand, and Vietnam.

Youth and Agriculture: The Infomediary Campaign in the Philippines, authored by Jaime Manalo IV, Katherine Balmeo, Jayson Berto, and Fredierick Saludez, documents the experiences in waging the Infomediary Campaign, an initiative to engage young people in agriculture. It is useful for students and practitioners in the fields of development communication, agricultural extension, agriculture, community development, and rural studies. It offers fresh insights on mainstreaming agriculture lessons in the curricula of secondary schools.

Handouts

Pilipino Handouts offer short tips on rice production to farmers:

- Armyworm at brown planthopper
- Likas na kaaway ng mga peste, paramihin
- Tips sa binabahang palay: maaari bang mag-ani kahit umuulan?
- Pagpili ng punlaan at paggawa ng kamang punlaan
- Tamang panahon at paraan ng pag-aani at paggiik
- Pag-aani gamit ang rice combine harvester
- Mga kapaki-pakinabang na insekto sa palayan (Part 1 & 2)
- Pamamahala ng stemborer o aksip
- Pag-iimbak ng binhi
- Pag-aani gamit ang reaper
- Pagbibilad at mekanikal na pagpapatuyo ng palay
- Pamamahala ng bacterial leaf blight
- Pamamahala ng mata-mata
- PhilRice Text Center at Pinoy Rice Knowledge Bank

Posters

Pinoy Rice Knowledge Bank Poster promotes the Bank as a one-stop source of information on rice and rice-based farming.

PhilRice Text Center Poster shows the relevance of the Center as help desk aiming to link experts, extensionists, and farmers by answering rice-related queries.

Magazines

Embracing our Heritage relates the changing landscape of rice with culture.

Enabling Hands in Changing Climate narrates successful projects of various groups that help farmers deal with the changing climate.

Bukas sa Pagbabago Magasin compiles inspirational stories of outstanding farmers and their best practices in rice and rice-based production.

Mula sa Bukid Magasin shares the stories of farmers who are into small and medium enterprises, optimizing farm resources.

Q&A Series

Q&A on Climate Change at Pagpapalayan addresses questions on the impact of climate change on rice production, the contribution of rice production to climate change, climate change management options, and climate phenomena such as El Niño and La Niña.

Q&A on El Niño, La Niña, at Pagpapalayan presents adaptation and mitigation practices, and technologies in rice production.

Rice Komiks

presents rice production technologies such as Kontroladong Pagpapatubig and Dry Seeding.

Knowledge products are available at www.pinoyrice.com, www. philrice.gov.ph, and PhilRice's Development Communication Division.

KURU-SAKA

IBINAHAGI KAY JAYVEE P. MASILANG

MAGING ORGANISADO, HUWAG MAG-SOLO

Kwento ni Romeo Tariao, 53, taga Pilar, Bohol

Habang ang iba'y kumikita sa pagdagsa ng mga turista sa Bohol, kami ay umaasa sa pagsasaka para mabuhay. Pagsasaka ang kinalakihan ko sa Niloan, Ormoc City, Leyte.

Sa Leyte, sa walong ektaryang lupa na aming pag-aari, dalawang ektarya ay naging pantustos sa aming pag-aaral. Di naglaon ay nahati-hati rin ang lupa nang pumanaw ang aking mga magulang. Sa pagkamulat ko, pagsasaka ang nagbigay inspirasyon sa akin para kumuha ng kursong agrikultura. Noong 1988, ako'y naging *agricultural extension worker* sa Cebu at nailipat sa Bohol.

Pagsapi sa kooperatiba

Noong 2004, ako ay naging miyembro ng Bohol Farmers Association o BoFamCo, isang samahan ng mga *seed growers* at mga karaniwang magsasaka kasama na ang mga propesyunal na nagbibigay serbisyo sa mga magsasaka.

Maraming magagandang pinagdaanan ang aming kooperatiba. Isa na rito ay ang nangyari noong 2007 nang nag-simula kaming magtanim at magparami ng *hybrid rice* na binhi sa tulong ng PhilRice at ng mga lokal na opisyal ng Bohol. Dahil dito, nakapagsuplay kami ng mga binhi sa buong Bohol at kalapit-isla tulad ng Iloilo.

Mas napagbuti pa ang kalagayan ng aming koop noong itinayo ng *Korea International Cooperation Agency* ang *Rice Processing Complex* (RPC) sa Pilar noong 2010, at ipinaubaya ang pamamahala nito sa amin noong 2014.

Malaki ang nakukuhang benepisyo naming mga miyembro ng koop. Dito kami kumukuha ng mga binhi at naggigiling ng palay. Ang mga ani namin ay pinagsasama-sama ng koop para ibenta. Maging ang ibang mga magsasaka bumibili ng mga binhi sa koop. Ang koop din ang namamahala sa pagbebenta ng kanilang ani. Dahil malaki ang produksiyon ng koop, nagsusuplay din kami ng bigas sa ibang mga koop.

Dahil dito, naging maganda ang operasyon ng aming koop. Noong 2015, ang kabuuang kinita ng koop ay umabot sa mahigit P2.7 M— P1.125 M nito ay kita mula sa RPC at P1.585 M naman ay kita mula sa produksyon.

Dagdag kita sa brown rice o pinawa

Sa tulong ng PhilRice at ng lokal na pamahalaan ng Bohol, inilunsad ang "Brown4good" na proyekto na naglalayong magiging tuluy-tuloy ang produksyon ng pinawa para may mabili ang mga tao sa abot-kayang halaga.

Mga piling barayti tulad ng NSIC Rc218 at Rc300 ang aming ginagamit sa paggawa ng *brown rice* dahil sa malambot ang mga ito kapag nasaing na. May sarili rin kaming *color sorter* upang masiguro na walang halo ang aming pinawa kapag naisalin na ito sa mga lalagyan. Ang bawat sako ng pinawa ay tumitimbang ng 25 at 50 kilo.

Sa ngayon, naibebenta ng aming koop ang *brown rice* sa halagang P35 kada kilo lamang kumpara sa karaniwan nitong presyo na P50-80 kada kilo. Sa ngayon, mula sa 5,000 kilo, umaabot na


JAYVEE P. MASILANG

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>
> - ROMEO TARIAO

sa 10,000 kilong pinawa ang aming naibebenta kada buwan.

Ibinebenta namin ang pinawa o *brown rice* kasama ng *black rice*, *premium white rice*, at *well-milled rice* sa sariling pwesto ng koop sa Tagbilaran City. Nakikipag-ugnayan na rin kami ngayon sa Bohol Association of Hotels, Resorts, and Restaurants upang maisuplay ang pangangailangan ng kanilang kliyente sa pinawa.

May tagumpay sa agrikultura

Ang aming koop sa ngayon ay may 1,400 miyembro. Ako ay nagsisilbing pangulo nito simula pa noong 2015. Sa tulong ng Poong Maykapal at ng aking mga kasamahan, ako ay kinilala ng Department of Agriculture bilang isa sa mga *Agri Pinoy Rice Achievers* noong 2011 at 2013.

Sa pagtutulungan ng bawat isa ay nananatiling matibay ang aming samahan at lalo pa namin itong palalakasin para mas marami pa kaming matulungang mga magsasaka, at mas mapatunayang may pera sa agrikultura. •

FOUR GOODNESS IN A CUP!

DEPARTMENT OF AGRICULTURE
PHILRICE
PHILIPPINE RICE RESEARCH INSTITUTE

BROWN RICE!

A cup of brown rice brings goodness to your body, to our farmers, to our country, and to other Filipinos. So you have four reasons to eat it for good.

BROWN 4 GOOD

#BROWN4good

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