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NOT ALL THAT GLITTERS IS GOLD Is GREEN DAVAO READY FOR GOLDEN RICE?

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Watershed Issues in Brief

Bantay Kinaiyahan is a regular publication of The Interface Development Interventions, Inc. to provide the public with relevant and concise information on pressing watershed issues

A Filipino meal is considered incomplete without rice. Across Asia and the West Indies, a sumptuous meal always features the cereal grain.

Worldwide, rice production is estimated over 600 million metric tons annually, according to the Food and Agriculture Organization data in 2010¹. In the Philippines, production level of rice in 2012 reached more than 18 million metric tons, higher than the 16.6 million metric tons² in 2011.

■ Rice Production

Rice seeds are produced traditionally or commercially. Traditional rice production relies on rice varieties, which are essentially groups of rice plants distinguished by common significant agricultural characteristics and assigned a common name. When rice is produced from a specific variety, a single line is planted and fertilized by self-pollination. The resulting progeny—or offspring—retains its distinguishing characteristics, enabling farmers to save seeds for replanting the next season.³

Commercial rice seed production differs from the traditional method by the end product: Hybrids. Unlike traditional varieties, hybrid rice is the product of a cross between two distinct rice lines. The production of hybrid seeds is done by transnational agricultural companies that have the technology and money. Farmers who use hybrid seeds do not save the progeny seeds for replanting because the seeds do not retain their distinguishing traits, reverting to the original traits of their parental hybrids.⁴ This genetic segregation of traits renders the seeds useless and so farmers need to buy new hybrid seeds every year. Farmers are then faced with economic hardship as they need to balance the benefits of planting hybrids with the annual cost of purchasing new hybrid seeds.

Did you know that:

- 67% of Davao's total area is classified as agricultural.
- Out of this 67%, only 2.5% (4,163 hec) is intended for rice farming and this includes both rainfed and irrigated.
- In 2010, the harvest yield from irrigated areas made up for 67.28 percent (or 9,553 metric tons) of the total rice production while the remaining 32.72 percent (or 4,645 metric tons) were produced from rainfed areas.
- That in terms of area covered, 53.13 percent (2,212 has.) of the 4,163 total hectareage are irrigated farmlands while 46.87 percent (1,951 has.) are rainfed.

Source: CPDO Davao City Comprehensive Development Plan 2012-2021



Nay Kiling Alibango grows native varieties of rice in her organic farm in Wangan, Calinan.

Traditional rice varieties in the Philippines and China have been reported to have high protein content, averaging 14%-16%. By comparison, the high yielding varieties introduced by IRRI only have an average protein content of 6-10%. Local red, purple and black rice have also higher levels of iron and beta carotene than the imported ones.

Source: www.lotusfoods.com/FarmersTerroir/Biodiversity.aspx

■ Genetic Diversity

At the gene bank of the International Rice Research Institute (IRRI) in Los Baños, Laguna, around 80,000 rice varieties are kept and preserved. Small farmers, however, cannot access these varieties. Many of the farmers are not even aware of the extensive stock that can actually be used to increase the genetic diversity of the local rice supply.

Rice biodiversity is important because of ecological, nutritional and cultural reasons. Genetic diversity ensures that planted rice have increased resiliency to plant diseases. Among farmers, local rice varieties are continuously cultivated and selected, resulting to traditional varieties which have adapted naturally to vast ranges of microclimates, with a wide range of resistance to local pests and predators.⁵ The more resilient the rice variety, the more chances it can survive and produce a high yield, which benefits both farmer and consumer.

■ The Threat of Golden Rice

The proposed commercialization of the genetically modified Golden Rice (GR) threatens this natural diversity. Golden Rice—named because of its yellow orange color—is a genetically modified hybrid which produces beta carotene and has been hailed as the dietary solution for the estimated 190 million people worldwide who suffer from Vitamin A deficiency.⁶

However, critics of this crop argue that Golden Rice is designed to deceive the public into allowing the planting of genetically modified crops into Filipino farmlands.

Under the guise of humanitarian aid, Golden Rice is being pushed for commercialization but environmentalists fear that once it gains a foothold in the local market, this would mean that other GMO crops like Bt talong will also be released all throughout the Philippines.

"It's a public relations stunt pulled by agri-business corporations to garner acceptance of Genetically Engineered crops and food," said Sarojeni V. Rengam, Executive Director of Pesticide Action Network Asia and the Pacific (PAN-AP)⁷.

At face value, the benefits of Golden Rice are laudable. But what is not revealed to the public is the fact that there are no comprehensive long-term feeding studies on the health impact of GR which have been published to date⁸, raising fears of potential negative effects on the human system.

There is also no clear evidence that consumption of beta carotene can cure Vitamin A deficiency, a fact raised by the International Rice Research Institute in its official blog.⁹

■ Impact on the Watersheds

GMO crops also increase pesticide use, a fact that worries watershed activists.¹⁰

Studies have shown that these genetically modified plants cause pesticide-resistant weeds and pests to emerge so that the only way farmers can kill these pests is by using more quantities of even more toxic and expensive chemicals.¹¹

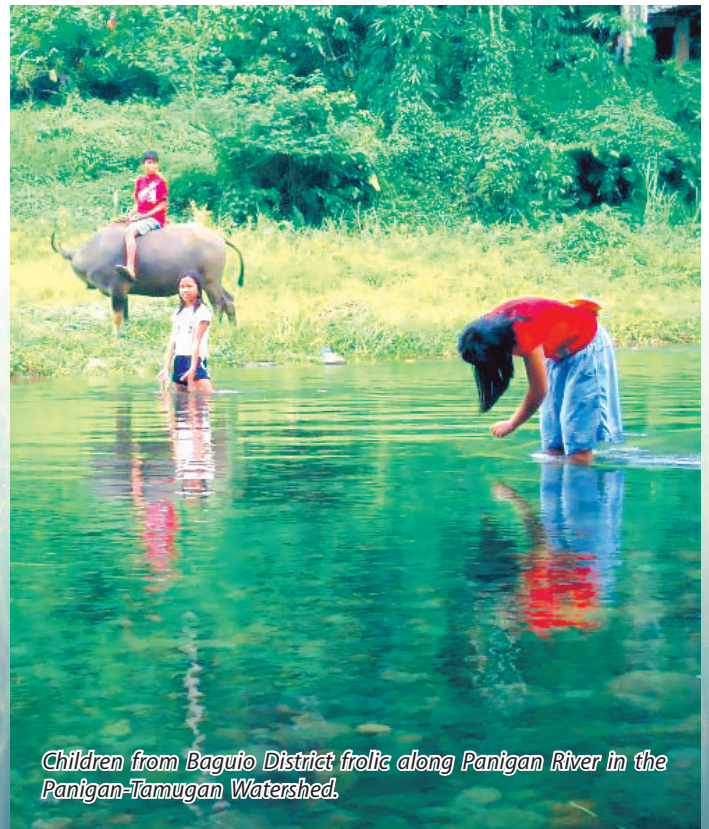
The stronger the pesticide, the longer it stays in the environment. In 2012, a study conducted by the non-government organization (NGO) Interface Development Interventions (IDIS) found traces of toxic pesticides in air and surface water samples taken from Davao's Talomo-Lipadas and Panigan-Tamugan Watersheds.¹² These chemicals, some of which have been banned internationally, do not degrade quickly and persist in the environment, raising concerns of long term contamination issues in the watershed.

"There is no escaping it," said IDIS Executive Director Ann Fuertes. "Despite their claims that GMO crops will need less pesticides, in the long run, GMO farming will still be chemical-intensive because pests will become resistant to pesticides, and farmers will end up using more quantities after a few cropping cycles," she pointed out.

"Despite claims by manufacturers that these new generation of pesticides are less toxic, the accumulation of these in the environment will still endanger one of our city's proud resources: our world-class drinking water," she said.

Also alarming is the significant risk of genetic contamination of native and local farmer-bred crops when introduced into Davao's agricultural lands which occupy the slopes and foot of the watersheds.

"An important indicator of a healthy watershed is its biodiversity. When you introduce a GMO crop into the ecosystem, you risk the stability of your environment because a GMO will contaminate the local gene pool," Fuertes added.



Children from Baguio District frolic along Panigan River in the Panigan-Tamugan Watershed.

■ Gene Flow and the Myth of Co-Existence

International genetic researcher and Third World Network scientific consultant Camilo Rodriguez pointed out that the very nature of genetic transmission among organisms makes it impossible to stop GM contamination.

"Gene flow is the movement of genes from one location to another," he said. "Pollen from a GMO crop can move not only to another non-GM crop but also to wild crop varieties."

Rodriguez, who recently visited Davao City last January 2014 to talk to local legislators about the GMO threat, emphasized that it is impossible to stop gene flow between organisms because in an open environment, everything and anything can be a potential carrier for the gene.



Genetic scientist Camilo Rodriguez orients Davao legislators on gene flow and the myth of co-existence.

"Seed movement through pollen propagation is a type of gene flow. Vectors like animals, wind and even moving water aid gene flow. And then there is also human-mediated gene flow which is typical in developing countries where farmers share a culture of seed sharing," he said.

Even growing GM crops separately from organic agriculture zones will not be enough to stop gene flow. Currently, there is no firm consensus among international scientists on the standard distances needed to prevent contamination between GM and organic crops. "It is impossible to predict the movement of the gene flow once the GM crop is released into the environment," Rodriguez said.

"This is, in fact, what led the French government to ban GM crops from their soil when they discovered that pollen can be transferred from GM to non GM crops separated by more than 50 meters," he revealed.

"This is why co-existence between organic and GMO crops is impossible. Nature will always find a way to transmit its genes, no matter what the barrier is. The idea of co-existence is, in fact, a fallacy," Rodriguez said.

■ The Case for Native Rice and Organic Farming

Such news is why organic advocates are up in arms against the planned release of genetically modified crops into the local farmlands.

The Go Organic Davao City, a local movement of organic practitioners and supporters, contends that Golden Rice will threaten the wild genetic stock of native rice which is proven to be more healthier and more drought resistant than the commercial varieties.

In fact, there is no need for Golden Rice, according to GoDC, because a steady diet of leafy green vegetables can in fact exceed the daily requirement of beta carotene which the body needs to create Vitamin A.

Policy-wise, Davao City's Organic Agriculture Ordinance rules out the entry of GMOs when it explicitly stated in its principles that "Organic agriculture cannot co-exist with genetically-modified crops, chemically-produced crops and related organisms, both living and non-living;"¹³

Other organic farming groups nationwide are now following Davao's example by pushing for similar ordinances in their own localities. In Mindanao alone, local government units (LGUs) in Bukidnon, South Cotabato, Zamboanga del Sur have been largely successful, with more LGUs and groups joining the bandwagon.

GoDC's Dagohoy Magaway said that these initiatives have been, in part, because of due to an enabling national policy environment. "The passage of Republic Act No. 10068 or the Organic Agriculture Act of 2010 has fueled other similar initiatives nationwide but there are still lots of things that have to be done in both local and national levels if we are to ensure that GMOs are entirely shut out from Philippine farmlands," he said.

■ So What Else Can Be Done? At the Local Level:

- Promote and practice trial farms and farmer-led rice breeding to conserve and improve the biodiversity of rice.
- Establish community seed banks in Davao's agricultural districts to ensure farmers' ownership of the seeds.
- Lobby for national government support for the conservation efforts of farmers in preserving native rice varieties as traditional cultural heritage.
- Implement the Davao Organic Agriculture Ordinance and convince farmers to shift to organic farming which uses organic or natural farm inputs that are not harmful to human and the environment.
- Support calls for Davao City to become an organic food basket in Southern Mindanao by lobbying for a local ordinance banning genetically modified crops and products
- Support your local organic farmer markets; the more consumers patronize organically grown produce, the more farmers will shift to organic farming

Did you know that other than yellow vegetables like squash, these vegetables and fruits are also rich in Vitamin A?

High in Vitamin A (a serving equivalent to 20% of your daily dietary requirement of Vit A)

- Sweet Potato
- Carrots
- Pechay
- Spinach
- Bokchoy
- Tomatoes
- Lettuce
- Broccoli

Good in Vitamin A (a serving equivalent to 10-19% of your daily dietary requirement of Vit. A)

- Asparagus
- Celery
- Okra

Source: <http://www.fruitsandveggiesmorematters.org/vitamin-a-in-fruits-and-vegetables>

- Lobby for the declaration of all environmentally critical areas (ECAs) in Davao's watershed as protected areas.
- Lobby to prevent GMO crops from being planted in Davao's ECAs.

■ At the National Level:

- Lobby for government support to ensure adequate budgetary support to finance priority and mandated programs of the National Organic Agriculture Program, especially on the support for small farmers and the establishment of seed banks to protect the traditional native varieties of rice.
- Lobby the government to stop the conversion of rice lands into other uses while also providing incentives such as real property tax exemptions for farmers to maintain their farmlands.
- Ban the commercialization of golden rice in the country to avoid contamination of our native rice varieties and lobby for national and local laws against GMOs.
- Lobby for a Biosafety and Labelling Law so that GMO crops can be strictly scrutinized and violators penalized.
- Push for genuine agrarian reform as the foundation of food security and social justice since this will provide the needed support for rice farmers and safety measures to prevent selling of 'ARB land'
- Join the online movement **standupforyourrice.org** and other similar campaigns against golden rice and other GMO crops.

Government Initiatives

- Preservation and protection of the Rice Terraces in the Cordillera as National Treasures through Presidential Decrees 260 in 1973 and 1505 in 1978. Another law was enacted in 2010 (RA no. 10066) to protect and conserve the terraces as part of the National Cultural Heritage.
- Passage of RA 10068 or the National Organic Agriculture Act 2010.
- Local Government-initiated organic agriculture projects, including the Arakan Upland Organic Rice Program and the mainstreaming of organic farming in the town of Dumingag in Zamboanga del Sur.
- Creation of local organic zones and passage of local organic agriculture ordinances, among them the GMO-Free Bohol, GMO-Free Mindoro, the Negros Organic Island, the GMO Ban Ordinance in Negros Island, Organic Agriculture Ordinance in Negros Oriental, the Organic Agriculture Ordinance of Davao del Norte, and the 2009 Organic Ordinance of Davao City.

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INTERFACE DEVELOPMENT INTERVENTIONS (IDIS)



Almacen Building, Km.
11, Davao-Bukidnon
Road, Catalunan
Pequeño, Davao City

email: interfacedvo@gmail.com