



Contribute to Better Rice Production and Nutrition in South East Asia

Better Rice Initiative Asia - Monthly Update

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Editor's Note

The March issue of the BRIA newsletter is based on the final report prepared by Giri Arnawa.

The purpose is to provide insights into the achievements of the Nutrition Component of BRIA Indonesia completed in 2016. The Nutrition Component consisted of two sub-components: oil fortification and rice fortification. The overall component's goal was to enhance the nutrition status of poor population groups in Indonesia. The objectives were (i) to improve quality assurance (QA) and quality control (QC) for vitamin A fortified edible oil; (ii) increase access to micronutrient fortified rice, especially for poor and vulnerable population groups; (iii) promote a healthy diet/broader nutrition deriving from the "daily rice bowl."

The private sector project partners for oil fortification and rice fortification were BASF Nutrition, DSM and GAIN, and the main public sector partners were the Indonesian Ministry of Agriculture (MoA), the Indonesian Ministry of National Development Planning (BAPPENAS), as well as the Indonesian National Agency of Drug and Food Control (BPOM). Further partners such as research institutions, schools, rice millers and traders have been involved directly and indirectly in the implementation of several activities.

As part of the BRIA Nutrition Component in Indonesia, several activities were implemented, such as oil fortification, trial production of premix kernels for rice fortification, social market research related to rice fortification, a clinical study of rice fortification, and different stakeholder workshops related to rice fortification and inclusive nutrition as well as rice value chain trainings to promote rice fortification at international, national and regional levels.

As a major result, BRIA has successfully stimulated the interest of the private sector to join the fortified rice business since the technology and production process have been tested and domestically proven. A number of small and big companies have become interested in producing premix kernels and fortified rice.

Furthermore, the Nutrition Component sought to improve the health and wellbeing of targeted households in Indonesia by promoting through social marketing, increased variety and quality of household dietary intake with healthy diet/broader nutrition deriving from the daily rice bowl. To achieve this goal, nutrition messages about the "daily rice bowl" were developed, tested and shared with the larger public. Qualitative assessments showed that 50% of the test subjects recalled at least 3 nutrition messages with unaided recall.

The positive results and remaining nutritional challenges in Indonesia lead to a final strong suggestion that the nutrition program should be continued to focus on further development and large-scale implementation of the tested and proven interventions.

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Overview



The Nutrition Component of BRIA Indonesia included oil fortification and rice fortification. Interventions focused on broader access to nutritious foods for poor population groups. BRIA cooperated with public-private partners to undertake fortification of local rice which is suitable for the nutritional needs and preferences of the Indonesian market with DSM as the main partner, as well as the fortification of oil through cooperation with BASE. Implementation took place from October 2013 to December 2016.

Specific Objectives and Indicators

Improved quality assurance and quality control for vitamin A fortified edible oil

- At least 80% of the food inspectors trained, apply their knowledge (assessment by consultant with the indicator fulfilled by the end of the project).

Increased access to micronutrient fortified rice, especially for poor and vulnerable population groups

- At least 2 identified “champions” (small and medium enterprise or SME rice mills) voluntarily sell fortified rice.
- A social marketing strategy, culturally appropriate and acceptable, was elaborated, pilot tested and implemented in the pilot region of the project.
- A concept to fortify rice within the scope of national social safety net programmes was developed and pilot tested together with public entities and the private sector.

Promotion of a healthy diet/broader nutrition deriving from the “daily rice bowl” through social marketing

- Nutrition messages about the “daily rice bowl” were developed, pilot tested and implemented for the larger public.
- Qualitative assessments showed that 50% of the test subjects, identified by simple random sampling, recalled at least 3 nutrition messages with unaided recall (assessment by consultant with the indicator fulfilled by the end of the project).

Knowledge and capacity building



Participatory Training for Food Inspectors



The Indonesian Agency of Drug and Food Control (BPOM) as the government agency conducted training for food inspectors in 2012, 2014 and 2015, in collaboration with Indonesian Nutrition for Food Fortification (KFI), supported by GAIN and GIZ-SAFO (Strategic Alliance for the Fortification of Oil and other Staple Foods). In 2016, BPOM conducted follow-up training and capacity building activities in collaboration with the GIZ-BRIA Nutrition Component Project in Indonesia for food inspectors who had not attended the previous trainings conducted.



The general training objectives were to i) improve the capacity of inspectors from the product certification and consumer service division in BPOM provincial offices for quality control of fortified cooking palm oil and ii) develop campaign materials on cooking oil fortification. The specific objectives were to introduce the Indonesian National Standard (SNI 7709:2012) for vitamin A fortification of cooking palm oil, including the rapid assessment of vitamin A in oil using i-Check Chroma, and its strengths and weaknesses in comparison to HPLC (High Performance Liquid Chromatography).

At least 80% of the food inspectors trained apply their knowledge.

Thirty-seven food inspectors of the BPOM Central Office and Provincial Offices in Indonesia have been trained to increase their knowledge on the benefits of vitamin A fortified cooking oil for the nutrition status of Indonesians, particularly among vulnerable population groups. The participants understood the content of SNI Cooking Palm Oil 7709:2012 and its implementation guidelines, the role and actions required for monitoring and controlling SNI implementation. They have gained knowledge on strategies and techniques to develop Information, Education and Communication (IEC) materials about cooking oil fortification, and understand the strengths and weaknesses of the rapid-test kit (i-Check Chroma) in comparison with High Performance Liquid Chromatography (HPLC). The i-Check Chroma rapid test kit was used as part of the training to measure vitamin A concentration in cooking oil.

The SNI 7709:2012 was launched in April 2012 and planned to be mandated in March 2016. The Ministry of Trade of the Republic of Indonesia emphasized that SNI 7709:2012 should be declared as mandatory for producers of fortified cooking palm oil in Indonesia while awaiting approval by the World Trade Organization (WTO). The Ministry of Trade, along with the Ministry of Industry and the Ministry of Health, jointly communicated and promoted the SNI into 11 cities in Indonesia. The Director General for Domestic Trade of the Ministry of Trade, Mr. Gunaryo, stated that the Ministries of Trade, Industry and Health are preparing a technical guideline on SNI implementation for mandatory compliance. As evidence of implementation, the Ministry of Industry revised the ministerial regulation No. 87/M-IND/PER/12/2013 into No. 35/M-/PER/3/2015, to align the provisions of fortified cooking palm oil to be valid and mandatory from March 2016 onwards. There were some changes in the new regulation by the Ministry of Industry, such as the content of vitamin A in rice at the market level that was changed from 40 IU (International Units) to 20 IU based on a recommendation by the Ministry of Health; the SNI certification system, quality test equipment, and standard operating procedure of production at industrial level. The National Agency for Drug and Food Control (BPOM) implemented the regulation to ensure that distribution and sales of fortified cooking palm oil are compliant with those control points that have been regulated as a part of the law enforcement.





Workshop on Rice Fortification for National Rice Fortification Programme

The general objective of the national workshop on rice fortification was to formulate an overall design and direction for a national rice fortification programme. The specific objectives were:

- Share findings of rice market research, local technology trial premix production and the public-private partnership (PPP) model.
- Achieve a common understanding among private sector partners of the stages and activities to be followed by each party to achieve efficient and effective synergies.
- Encourage private sector engagement in rice fortification.

The workshop was carried out on 4 June 2015 in Jakarta and was attended by a total number of 92 participants representing the following public-private sectors and international non-governmental organizations (NGOs):

- Government representation at the national level: Ministry of Health (Kemenkes), Ministry of Internal Affairs (Kemendagri), Drug and Food Monitoring Agency (BPOM), National Logistic Agency (Perum BULOG)
- National and international organizations: World Food Programme (WFP), GAIN, SEAMEO RECFON, Aisyiah, Tim Penggerak PKK Pusat Pokja III, GIZ, Indonesian Rice Miller and Rice Trader Association (PERPADI)
- The private sector partners interested in rice fortification: PT. Mercur Buana, PT. Sinar Makmur Komoditas, PT. Korie Tei, PT. Sanmas, PT. Sinta Rama, PT. Surya Abadiperkasa, PT. Ridda Tamma, PT. Karya Jasa Husada, and PT. FITS Mandiri

Rice fortification technology (prototypes of equipment and machinery) are available domestically. Rice millers are interested in producing premix kernel as well as fortified rice. They are convinced that this project will provide added value for broken rice. Fortified rice can be targeted at all consumer categories with low, middle and high income levels. However, the production of rice kernel has to be monitored to ensure the quality of the nutrition added in the kernel.

Increased access to micronutrient fortified rice



“Champion” rice mills (SME) voluntarily sell fortified rice.

Three small and medium enterprises interested to be “champions” (forerunners) by voluntarily producing and selling fortified rice, have been identified.

1. PT. Surya Jaya Abadi Perkasa (SJAP)

SJAP is a food processor located in Probolinggo, East Java. SJAP was established in 1989 and the current President/Director is Mr. Cipto Santoso. The company’s business is food processing with such products as corned beef, smoked sausages, fast food meals, vegetables and sauces. The company has a packing facility for frozen products, as well as business units on composting, and dairy milk production located at the foot of the Bromo Mountain in East Java.

SJAP is interested in becoming a producer of premix kernel for rice fortification. The company has received technical assistance under the BRIA Nutrition Component for their production process provided by SEAFAST (Southeast Asian Food and Agriculture Science and Technology) as an award recipient for trial production of premix kernel for commercial fortified rice. Know-how and technology transfer was supervised by DSM experts who provided ingredients such as vitamins and minerals necessary for premix kernel production for fortified rice.

A cooperation agreement was signed between SJAP and the GIZ-BRIA Nutrition Component. The purpose was to establish a cooperation framework and facilitate collaboration between the parties to meet jointly-determined goals and objectives for implementing the BRIA Indonesia Nutrition Component. Both parties intend to jointly engage in premix kernel production, influence the government on rice fortification policies, and raise public awareness on the nutrition and health benefits of fortified rice. The GIZ-BRIA Nutrition Component provided technical support on the quality of premix kernel while SJAP provided equipment, facilities as recommended and human resources for training in premix kernel production. In addition, SJAP registered the final product with government authorities. SJAP has also signed a business-to-business (B2B) cooperation with Sinar Makmur Komoditas (SMK), an SME based in Jombang, East Java, to produce premium fortified rice. The B2B cooperation’s initiation was based on a meeting with PERPADI (Indonesian Rice Miller and Trader Association) of which both SJAP and SMK are members.

2. UD. Sinar Makmur Komoditas

Sinar Makmur Komoditas (SMK) is an SME rice mill in Jombang, East Java, and a member of IRMTA. The owner is Mr. Indratan.

SMK is improving the performance of processing equipment to fulfil production standards, focusing on premium fortified rice. In their cooperation, SJAP produces premix kernels with premix ingredients (vitamins and minerals) sourced from DSM. SMK then produces fortified rice for premium commercial products from SJAP premix kernels. SMK received technical capacity training to improve the performance of processing equipment provided by SJAP. Markets and consumers have been identified, particularly in East Java, for premium commercial fortified rice.



3. PT. FITS Mandiri

PT. FITS Mandiri is a start-up company operating since 2015 which focuses on the production of commercial functional foods. The start-up is managed by Ms. Retno Wulandari, STP and supervised by Prof. Selamat Budijanto. PT. FITS Mandiri received a contract award from the Food and Nutrition Society of Indonesia (PERGIZI) to produce two 100 kg production batches in February and April 2016.

Additionally, the start-up produced 113.2 kg of premix kernel to combine with normal rice to produce 11,327 kg of uncooked quality fortified rice for PERGIZI to support the BRIA Nutrition Component with the 'Clinical Impact Study of Micronutrient Fortified Rice for Teenage Girls in Islamic Boarding School in Medan, North Sumatra.' The Islamic boarding school in Medan adopted and used mixing technology to produce fortified rice domestically at school with technical capacity training provided by PT. FITS Mandiri and SEAFast. PT. FITS Mandiri received a total amount of IDR 431,970,000 via a subcontract from PERGIZI to produce premix kernel and fortified rice, as well as supply mixer equipment.

PT. FITS Mandiri was officially established in 2000, and initiated by the Department of Food Technology at Bogor Agricultural University to raise student awareness of food processing development. In 2015, PT. Bogor Life Science and Technology (BLST) acquired and transformed the company with the vision to be an excellent learning centre for functional food products development. As of September 2015, the business is situated at IPB Science Park 'Taman Kencana' Bogor, West Java, and is equipped with a pilot plant and processing machinery. The business is operated by 4 employees for production and administration, as well as supervisors and experts related to food and nutrition.

PT. FITS Mandiri produces and sells analogue rice (artificial rice), noodles, and chips that are made of maize as a source of raw material, which are developed based on invention research results of SEAFast under the BRIA Component Nutrition.

Social Market Research on Rice Fortification

BRIA Indonesia assigned Savica Consultancy (SAV-ICA) to implement qualitative consumer-focused social market research in East Java. The objectives of this research were:

- Understand consumers' willingness to pay (WTP) for an added value product (fortified rice) with health benefits.
- Understand the consumer profile, their attitudes towards and habits related to rice.
- Evaluate the acceptance of the product's taste, physical qualities, and preparation process (including consumers' willingness to consume fortified rice/acceptability of fortified rice).

This social market research about rice fortification in East Java can be obtained from Publications on the BRIA website.

Pilot Test of Rice Fortification



The Food and Nutrition Society of Indonesia (PERGIZI PANGAN), in collaboration with BRIA Nutrition Component Indonesia and GIZ, conducted a study on fortified rice production and a clinical impact study to gain evidence on the effectiveness of fortified rice consumption in school children to reduce micronutrient malnutrition in Indonesia. The general objective of this study was to gain evidence on the efficacy of fortified rice to improve the nutritional status of female teenage boarding school students. The study was conducted from January to September 2016 in Medan, North Sumatra Province, Indonesia.



This study tested the effects of micronutrient fortified rice which was acceptable for consumption by teenage girls. The micronutrients fortified into rice included iron, zinc, folic acid, vitamin B1, vitamin B12 and vitamin A. The study showed that rice fortification had a beneficial effect on increasing haemoglobin, ferritin and serum levels in female teenage students. The results of the clinical study were disseminated to stakeholders at a half-day seminar in North Sumatra conducted by the Regional Development Planning Agency of North Sumatra Province, Department of Health. The abstract of Rice Fortification and Its Efficacy from the clinical study was reviewed and accepted for oral presentation at the 1st Public Health International Conference, held on 1-2 December 2016. A model for scaling up rice fortification in Indonesia through PPPs was promoted at the Responding to the Nutrition Transition in the Asia Pacific Region workshop and seminar conducted by SEAMEO RECFON, the Southeast Asian Ministers of Education Organization, and the Regional Centre for Food and Nutrition, on 4 November 2016 in Jakarta. Furthermore, the study results will be presented at the 1st Southeast Asia Public Health Nutrition Conference in conjunction with the Nutrition Society of Malaysia 32nd Annual Scientific Conference with the theme “Together in Advancing Public Health Nutrition,” which will take place from 14-17 May 2017, at Hotel Istana Kuala Lumpur, Malaysia.

The production and clinical impact study of micronutrient fortified rice for teenage girls in an Islamic boarding school in Medan, Indonesia can be downloaded from Publications on the BRIA website.

Rice Fortification Policy



Based on the results and recommendations of the National Workshop on Rice Fortification conducted by the Indonesian Rice Miller and Trader Association, and supported under the BRIA Nutrition Component, the Government of Indonesia determined:

- Rice fortification products should be registered under the Food Security Agency, Ministry of Agriculture, Republic of Indonesia, not under BPOM.
- Based on Article 1 of Government Regulation No.28/2004 about Safety, Quality and Nutrition of Food, rice and/or fortified rice belongs to the category of fresh food, and is not a derivative product.
- Article 42 (point 1 and 2) of the regulation states that only processed food products must be registered under the National Agency for Drug and Food Control (BPOM).
- There are several information requirements to be fulfilled by producers, such as a company profile, a certificate of company registration, and an SOP (standard operating procedure) of the production process.

Promotion of a healthy diet/broader nutrition through social marketing



Nutritional Patterns for Indonesia

At the national level in Indonesia, desired nutritional patterns should be promoted as part of the “daily rice bowl” nutrition message. It was intended to facilitate and promote dietary diversity scores and balanced nutrition. According to recent national statistical data, the average rice consumption was decreasing from 139.15 kg/capita/year to 135.01 kg/capita/year. The decrease in consumption was due to changes in the lifestyles of communities which tend to consume less rice as the middle class grows, as well as changes in the population’s dietary diversity score.

According to the dietary diversity score, the population still consumes an excess amount of rice (39.4 gram/capita/day), and oil and fat (2.6 gram/capita/day). There was a huge deficit for the consumption of tubers (61.2 gram/capita/day) and meat (57.8 gram/capita/day), with vegetable and fruit consumption at only 38.6 gram/capita/day.



Introduction of Rice Fortification at National Rice Festival

There are many rice varieties available in Indonesia. To introduce new products and raise awareness of the agricultural business, especially for rice, the Ministry of Agriculture (MoA) conducted the Nusantara Rice Festival Event at the Epicentrum Walk (EPIWALK) Building in Jakarta from 23-24 November 2015.

The BRJA Indonesia Nutrition Component, in collaboration with partners from the association of rice millers and traders, and fortified rice producers, namely Surya Jaya, Fits Mandiri and Graha Diva Nutrisindo Companies, displayed their products (premix kernel and fortified rice), and distributed informational brochures about BRJA project fortified rice to visitors.

This event included the first meeting of the Indonesian government on rice fortification regulation, with an understanding that the registration of fortified rice will be under the MoA, excluding the registration of functional rice (for health risk reduction claims: diabetes, stroke, etc.).

The output of this event was that the Indonesian government was convinced that fortified rice already circulating on the market was unregulated. The first meeting of the Indonesian government on rice fortification regulation was organized with agreement that the registration of fortified rice (for nutrient content claims) will be handled by the MoA (OKKP, both central and provinces), excluding the registration of functional rice (for health risk reduction claims: diabetes, stroke, etc.).

The OKKP (Otoritas Kompeten Keamanan Pangan or the Competent Authority of Food Safety) is an authority which has been established at the national and provincial levels in Indonesia under the Food Security Agency of the MoA. The role of OKKP is to provide quality assurance of fresh food products, as well as control the food safety of fresh food products.

50% of the test subjects recall at least 3 nutrition messages with unaided recall.

Dietary Diversity Score (DDS)

A qualitative assessment was used to assess the effectiveness of the intervention on the DDS by assessing change in the dietary habits of target household members. DDS is measured by recording how many food groups are consumed over a given period of time (24 hours). There are 12 food groups within a score range from 0-12. The food groups include: cereals; roots and tubers; vegetables; fruits; meat, poultry; eggs; fish and seafood; pulses, legumes and nuts; milk and milk products; oil and fats; sugar and honey; miscellaneous.

The aim was to improve the variety and quality of household dietary intake and thereby improve the health and wellbeing of rice-farming households. This should have a long-term positive effect on the cognitive ability of household members, especially younger members, by improving their ability to learn and apply improved rice cultivation techniques and increase the productivity of their farms. In addition, the physical health of adult farmers should be improved, leading to a positive long-term impact on farmer productivity, since insufficient nutrition in rice value chains might lead to decreased productivity. In 2007, the World Bank demonstrated that increasing agricultural production and household income does not sufficiently reduce malnutrition.

Example:



Rice, sambal (onion, chili) **DDS = 2**



Rice, cucumber, sambal (chili and onion), egg, groundnut, salt fish, fish in tomato, onions and spices sauce **(Total DDS = 5)**

Inclusive Nutrition Training at Farmer Level



BRIA in Indonesia initiated a nutrition-sensitive agricultural development model which aims to achieve positive nutritional outcomes through agricultural development interventions. The intention of intervention was to enhance public awareness, and reduce malnutrition in rural populations whose livelihoods are generally based on agriculture.

Nutrition training was designed to be integrated into existing BRIA Agriculture Component training at the farmer level, and targeted at those who have participated in Farmers Field Schools to attend one additional day of training. The training provides an overview of good nutrition practices, and how to create a balanced diet for family members, including vulnerable groups such as pregnant women, children, and female teenagers, as well as the importance of quality food intake for the body to function well. Value chain development does not guarantee nutrition improvement since the value chain is commodity-oriented.

Inclusive nutrition (Good Nutrition Practices) training was conducted at the rice farmer-level of the BRIA Agriculture Component for those who had been previously trained on Good Agricultural Practices (GAP) for Rice. In total, 896 farmers have been trained in three districts of two provinces targeted by the BRIA Agriculture Component and BRIA Nutrition Component. Among the nutrition training participants, 40.84 percent were female and 50.16 percent were male farmers.

Province	District	Male	Female	Total
North Sumatra	Langkat	127	110	237
	Serdang Bedagai	182	183	365
East Java	Jember	221	73	294
		530	366	896

To support the training and field activities on Good Nutrition Practices at the rice farmer-level, a training manual has been developed which emphasizes three key messages:

- 01 Nutrition definition and why nutrients are required by the body**
 - Nutrient Function
 - Macro and Micro Nutrients
 - Tumpeng Gizi Keluarga (Nutrient Balance Pyramid)
- 02 Balanced Nutrition Principles**
 - Guidelines for Balanced Nutrition
 - Nutrient Status
- 03 Vulnerable Groups and Nutrition**

DDS Evaluation Survey 2017

In early 2017, the project under the BRIA Agriculture Component planned to conduct a DDS survey to assess changes in the dietary habits of target farmer households who had received training on Good Agricultural Practices for rice, plus additional training on Good Nutrition Practices.

Way Forward

1. In general, it is recommended to continue the implementation of the Nutrition Component in Indonesia based on the results achieved and under the following considerations:

- The Revision of Ministry of Industry Regulation No. 87/M-IND/PER/12/2013 into No. 35/M-/PER/3/2015, to align the provisions of fortified cooking palm oil to be valid and mandatory on March 2016 onwards needs to be supported to ensure its implementation at industrial and ground levels.
- Continuous improvement of premix kernels production domestically in Indonesia is needed to enhance quality and reduce the loss of micronutrients (vitamins and minerals) during the production process.
- Incentives, technical assistance and technology transfer need to be promoted and provided for the industries to produce premix kernels for rice fortification and fortified rice.
- Public awareness of rice fortification at all stakeholder levels such as government, private sector, and communities need to be initiated, enhanced and supported.
- Rice fortification evidence research or studies at several interventions need to be initiated for comprehensive results.

2. The DDS Survey at the rice farmer-level will be conducted in 2017 for the last group of BRIA Agriculture Component farmers who were trained from 2015-2016.

3. The nutrition programme intervention is a main agenda in Indonesia with the following considerations:

- Indonesia has become one of the 17 countries concerning nutrition problems, placing the country's nutrition status at the same level as African countries according to the Global Nutrition Report by IFPRI (the International Food Policy Research Institute).
- According to Riskesdas 2013 (Indonesian Basic Health Research) of the Ministry of Health, 37.1 % of pregnant women, 28.1% of children under five years and 26.4% of school children are anaemic.
- There is not much change in the prevalence of anaemia among children under five and school children.
- Value chain development does not guarantee nutrition improvement since value chains have a commodity orientation. Nutrition improvement requires diverse food consumption. So far, value chains have not been designed with explicit nutrition objectives, and this work needs to be initiated and conducted.

The final report on the BRIA Indonesia Project Component 2: Nutrition, dated December 2016, can be downloaded from Publications on the BRIA website.

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