Nutritional security ...

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fertiliser in soil, adding zinc oxide to clean rice, and above all enriching rice grain with zinc through breeding process. The last approach was considered,in a workshop at USAID office in Dhaka, to be the most sustainable at farmers' and consumers' levels, although cost of such breeding is high at research level, which happens only once in the process of development and is usually supported by CGIAR centres. CGIAR is the Consultative Group of International Agricultural Research, IRRI is one such institute.However, research indicated more uptake of zinc in grain if zinc fertiliser is applied and the crop is irrigated using AWD (Alternate Wetting & Drying) technology.

Bangladesh Research Institute(BRRI) already released four rice varieties containing different levels of zinc content. These varieties are competitive with superiority to other existing mega varieties having potential high yield, earliness and tolerance to tidal flooding and strong winds, and above alladditional nutrients. These are :(a) BRRI dhan62(Aman season variety, 100 day life cycle,contains 20mgzinc/kg of milled rice & 9% protein,yield potential 4.5-5 ton/ha); (b) BRRI dhan64 (Boro season variety,145-150 days life cycle,contains 24mgzinc/kg of milled rice, yield potential 5.7-7.0 ton/ha); (c) BRRI dhan 72 (Aman season variety,125-130 days life cycle, contains 22.8mg zinc/kg of milled rice, yield potential 5.7 to 7.5 ton/ha with proper care). Plants of this variety are 116 cm tall with stout stems suitable for growing in tidally flooded southern districts and under strong winds; (d) BRRIdhan74 (Boro season variety, 147 days'life cycle,contains 24.2mg zinc/kg of milled rice,yield potential 7.1-8.3 ton/ha, only 92 cm height).

The advantages of these varietiesare that these are inbred varieties and farmers can produce seeds for their own use like other existing traditional and modern varieties developed through breeding process and these are not GMO against which people have some apprehensions. BRRIdhan62 is the shortest duration variety which allows accommodation of one extra winter crop before Boro rice establishment in the field. Farmers and the contract growers of the seed producer associations in Meherpur and Jessore districts reported that this variety can also be cultivated in Boro and Aus seasons, in fact some have started producing accordingly, although it is recommended for Aman season. Those seed producers cannot sell seeds of this variety with its own name for Boro and Aus seasons because of legal relevance. The variety could spread in Boro and Aman season with original identity if the National Seed Board approves this varietyforthese seasons. As a result,zinc enriched biofortified rice could cover more areas and more people in the villages to accesszinc nutrition with knowledge and confidence.

HarvestPlus, co-ordinated by International Centre for Tropical Agriculture (CIAT) and International Food Policy Research Institute (IFPRI), is a global alliance of research institutions and implementing agencies that have come together to breed and disseminate bio-fortified crops for better nutrition. IFPRI and CIAT have started implementation of the program "HarvestPlus" (Email: k.bashar@cgiar.org; webpage: www.HarvestPlus.org) in 2002. By the end of 2016 HarvestPlus will has a goal to reach an accumulated number of 570,000 farming households and by 2018 the target is 1,375,000.

HarvestPlus aims to improve the zinc status of Bangladeshi women and children through the introduction of high zinc rice varieties for production and consumption by smallholder farm households. The micronutrient target increment for zinc in rice is 12 ppm i.e. 12 mg/kg; this increment provides about 25% of the Estimated Average Requirement (EAR) for 4-6 years oldpre-school children and adult women of child-bearing age. In Bangladesh, since 2013, HarvestPlus confined their works within seed production and delivery through fivegovernment organisations including BRRI and DAE, two private seed producerassociations comprising about 300 small and medium companies and 25NGOs distributed over 350 upazilas of 58 districts. Based on the last 2 years' dissemination and delivery activities with the help of GO,NGO and private companies HarvestPlus could reach 120,000 Households through distributing 360 tons of seeds. It has plan for 2016 to reach 360,000 Households through direct and indirect seed distribution.The target is to increase diffusion rate from 1:3 to 1:5 through farmers to farmer seed exchange or selling seeds to neighbours.

In order to reduce hidden hunger of zinc nutrition for poor people, government needs to play leading co-ordination role through the following strategies: (a) create awareness about benefit of zinc rice consumption by rural and urban poor through publicityin the media and relevant organizations; (b) mainstreaming of seed production and delivery to farmers using BADC and private seed companies; (c) entrusting DAE for overall extension activitiestowards popularization through its rural level extension workers; (d) involve female health visitors to motivate rural women for feeding their children with zinc rice; (e) guard against any attempt of consumers being cheated—millers and rice traders should sell zinc enriched rice in sealed bags with name of appropriate zinc rice varieties printed on the bag and duly certified by rice millers so that quality can be ensured through regular monitoring by BSTI with initial assistance from HarvestPlus. (Such an approach is already in practice by Aristocrat Agro Limited for Low GI (Glycemic Index) rice valuable for diabetic patients.) And finally, (f) increase demand and market share of zinc rice. HarvestPlus has initiated work towards these aspects for implementation during 2016.The government and the development partners should extend their hands to support this moral activity to save our millions children from the hidden hunger.

On the whole, a national campaign will need to be organised for providing zinc nutrition to poor people through a national level committee consisting of Ministries of Agriculture, Health & Family Welfare, Food, Women& Children Affairs and other relevant organisations under the leadership of Ministry of Agriculture.Since it is an approach of rice based nutrition, which is feasible at village level, proper leadership and guidance can successfully address zinc nutrition deficiency. It is worth mentioning that golden rice, containing Pro-Vitamin A isin the final stage of research for accessibility to consumers.

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