

Transforming rice breeding

An alternative approach to food security

JIBAN KRISHNA BISWAS, PHD

Rice is more than just a food source to us. It is part of our culture, an article of trade to reduce hunger, alleviate poverty and maintain political stability in Bangladesh. Rice covers most of our land almost thorough out the year. We get the lion's share of our daily calorie intake from rice.

The country has a satisfactory upward trend in rice production over the decades. However, with the scientific ingenuity and farmers toil, a farmer's friendly political intervention after 2009 helped the country to attain the ability to export modest amount rice. Even the government included a considerable amount of rice in the relief materials to Nepal after the devastating tremor last year. Therefore, undoubtedly the country has attained self sufficiency in rice, a milestone towards food security, but still away to some extent from the adequacy and accessibility of safe and nutritious food to everybody in the country through peoples' affordability—in other words, sustainable food security.

To achieve sustainability in food security is pretty difficult but not impossible. The highest population density, decreasing per capita arable land, over exploitation of underground water, climate change, lack of adequate number of farmers' friendly crop variety etc. are the prime challenges to achieve the sustainability. Out of those challenges, population growth and grow more food are the prime concern to the government since 1960s. Over the years (1950 to 1965), the population of Bangladesh has

increased at the rate of 2.23 million per year. Vis-a-vis rice production has increased over the same time at the rate of 0.03 million tons per year. Despite a lot of measurements, the rate of population is still in its upward trend and would reach around 233 million by 2050. By this time the rice demand for Bangladesh would be around 40 million tons. These trends of rice production and population growth might yield severe shock of food shortage by 2050, provided no

anxiety to us and the estimation is based on the per capita per day consumption of 541 gm of rice. But we have another estimation where per capita rice consumption is considered 470.49 gm per day (World rice statistics: IRRI). According to this estimation there will be no shortage of rice up to 2030. However, the country might experience the shortage of 2.18 million ton in 2040 (just a year ahead of vision 2041, the year when the country would be a developed one) and



PHOTO: STAR

significant technology is discovered. It is estimated that shortage of rice at years 2020, 2030 and 2040 will be 1.68, 6.02, and 7.80, million tons, respectively. Similarly, the expected shortage by 2050 would be 10.50 million tons. This prediction is a matter of

5.69 million ton in 2050. It is good to know that rice consumption in Bangladesh is in decreasing trend and if it comes down around 400 gm per person per day, then rice scarcity might not be a problem even up to the middle of this century. Still we cannot

avoid the inevitability of rice from our own source. Therefore, we have to grow rice with our own limited resources along the increasing climatic threats. It means our rice agriculture will be always in tension how to maintain the productivity. Therefore it is a critical problem to take care of.

Total cultivable land (11.37 million ha) under rice has experienced a little change since independence. Transplanted Aman area (5.2 million ha) experienced the same. But the area under Boro has increased a several fold (from 0.5 million ha to around 4.85 million ha) just at the expense of Aus, Jute and some upland crop lands. Therefore, a little scope is left to increase the area under rice with the ongoing cultivars. However, some of the unfavourable land could be exploited if climate smart varieties or technologies are made available. Unfortunately, due to geographical position, Bangladesh is one of the most vulnerable countries in the world with so many extreme events like cyclones, droughts, floods, salinity intrusion, heat and cold waves, etc. Climate change is a reality now. So these extreme events are quite frequent to incur a heavy loss to the crop. Nevertheless, Climate smart varieties and technologies are coming up to cope with the arrogant environment. Though these varieties and technologies might be good for today but not for tomorrow. The alarming situation is that the modern rice varieties have reached their yield plateau. The input use is already high and shrinking the scope of using land and water resources. Even due to some unavoi-

able reasons, farmers are getting unable to harvest the maximum potentiality of their crops. So the genetic gain (the increase in crop performance that is achieved through genetic improvement programs per unit time of breeding) we are having is not up to mark (0.5%).

Modern rice varieties (MV) in Bangladesh occupies 82% of the total rice area. Despite having a good number (77; originally it was 65; recently 12 new varieties were added in this row) of modern rice varieties only a few (BRRI dhan28 and BRRI dhan29 in Boro and BR11 in Transplanted Aman) has got the status of mega (very popular) varieties. Bangladesh Rice Research Institute (BRRI) released these varieties quite a long time ago (BR11 is released in 1980 (coverage 40% of the T. Aman area) and BRRI dhan28 and BRRI dhan29 in 1994), still they are popular (coverage 60% of the Boro rice) because of their acceptability to the farmer and consumer as well. The present yield potentialities of these varieties are not beyond question. Because they are getting weaker with days to fight against the recently developed biotic and abiotic stresses. Still farmers bother a little to the advice of the scientists to replace these outdated varieties with the new ones. It means Plant Breeders are in difficulties to replace varieties already in farmers' hand. The popular varieties cultivated over the years are in a process of creating unwanted pest-pressures in a cropping system to

CONTINUED ON PAGE 20

EBL
Consumer
Banking

purple is the new pink

EBL introduces two new cards for women



EBL Visa Platinum Credit Card

- Only for female professionals
- Issuance fee ₳ 999
- 100% waiver on renewal fee for 18 transactions per year
- Complimentary access to SKYLounge at HSIA*
- Up to ₳ 10 lac accidental life insurance protection
- 0% interest installment facility through ZIP
- International concierge service



EBL Visa Platinum Debit Card

- Only for EBL Smart Women's and EBL Fifty+ female accountholders
- Annual fee ₳ 600
- Dual currency debit card
- Up to 50% waiver on first year's locker fee
- Up to ₳ 1.8 lac accidental life insurance protection
- 0% interest installment facility through Debit EMI
- 30% processing fee waiver on EBL Mukti SME loan**

Discounts and privileges at hundreds of local and global partner outlets

*Hazrat Shahjalal International Airport | **Conditions apply

APPLY TODAY