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Taller, stronger rice plant

Bangladeshi scientists develop 2 modern, high-yielding varieties that can withstand tidal surge

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Scientists have come up with a solution for southern farmers who have long been deprived of the benefits of high-yield modern rice varieties (MVs) that cannot grow on tidal wetlands.

After 12 years of arduous breeding process, they succeeded in developing two modern varieties suitable for cultivation in the tidal floodplain ecosystem of the southern delta region, with the promise of an additional yield of one million tonnes a year.

The varieties -- proposed as BRRI dhan77 and BRRI dhan78 -- are set to get regulatory approval anytime this month, said Director General of Bangladesh Rice Research Institute (BRRI) Jiban Krishna Biswas.

Against 2.5 to 3 tonnes of rice per hectare, which farmers reap from traditional varieties, the new modern varieties will bring about 4 tonnes of crops a hectare

during the Aman season in July-December, said Helal Uddin Ahmed, chief scientific officer at the research institute.

While farmers elsewhere have already switched to MVs from low-yield traditional varieties, rice growers in over a million hectares of tidal wetlands have had to remain satisfied with homegrown varieties.

So long indigenous varieties have performed better than modern varieties on tidal floodplains because seedlings of the former are taller than the latter. As the region is at the proximity of the sea and inland estuaries, shorter seedlings often fail to survive the water flowing in and out with high tide and low tide twice a day.

BRRI dhan77 and BRRI dhan78 are bred in a way that their seedlings would be tall in size and would survive the tidal wetland condition, said Helal, a BRRI plant breeder.

When farmers take 30/35-day-old seedlings from seedbeds for planting in the fields "our most productive MVs like BR11 are hardly 35cm tall and fail to withstand tidal water. But the seedlings of the two new breeding lines would be doubly tall [65 to 70cm] and would well withstand the tides," he explained.

The newly developed breeding lines would meet southern farmers' aspiration for higher yields in the Aman season, said scientists at the BRRI.

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Nationwide modern varieties coverage in rice cultivation has increased from 25 percent in 1972 to over 80 percent now, but their penetration in the tidal regions of Barisal, Patuakhali, Jhalakathi, Pirojpur, Bhola, Bagerhat and Gopalganj has remained at 15 percent for all these years.

Helal, who has been leading the breeding project since 2003 for developing rice varieties suitable for the tidal wetland condition, expressed the hope that the new MVs would be a breakthrough.

These will offer the southern farmers a good choice to shift from low-yield homegrown varieties like Sadamota, Lalmota, Moulata, and Dudhkalom.

The new MVs have been developed by crossing homegrown varieties like Sadamota, Dudhkalom with high-yield modern varieties, said BRRI DG Jiban Krishna Biswas. That means BRRI dhan77 and BRRI dhan78 are customised in a way that southern farmers will find the "good-height seedling" characteristic of local varieties and "high-yield" characteristic of modern varieties in them, he explained.

Thanks to the rapid replacements of low-yield traditional varieties with high-yield modern varieties, Bangladesh's production of the staple has tripled since independence.

But the production has not gone up on tidal floodplains that constitute an important agro-ecological zone covering an extensive area in the south central coastal region of Bangladesh.

Once approved by the National Seed Board and popularised among farmers, cultivation of BRRI dhan77 and BRRI dhan78 would lead to the production of an additional one million tonnes of rice per year, scientists expect.

BRRI Director (Research) Ansar Ali told The Daily Star that apart from these varieties, two other new rice breeding lines -- BRRI dhan75 and BRRI dhan76 -- meant for high yields in the Aus and Aman seasons are in the pipeline for regulatory approval.