

Knowledge-based agriculture needed in Bangladesh



DR M ABDUL MOMIN

Agricultural history was essentially built on hard work, experience, and generational heritage. Bangladesh's agriculture is no exception. Let me begin with a widespread story! On a hot summer day, a crow was desperately thirsty. After searching for a long time, it spotted a pitcher at some distance. However, the water level in the pitcher was so low that the crow's beak could not reach it. The crow could not figure out what to do. Then an idea struck it. Using its intelligence, the crow picked up the small pebbles lying nearby and dropped them into the pitcher one by one. After a lot of effort, the water level gradually rose. Finally, the crow was able to drink the water from the pitcher and quench its thirst. This story is a wonderful example of how hard work and intelligence play a crucial role on the path to success.

The story of Bangladesh's agricultural transformation from labor-intensive to knowledge-based agriculture closely resembles that of the thirsty crow. The transformation began out of necessity. Since the dawn of civilization, agriculture here has been more than a means of producing food; it has been the foundation of culture, economy, identity, and independence. Every inch of this land holds the stories of farmers' sweat, devotion, and sacrifice.

Until the Mughal era, agriculture was the central pillar of the regional economy. During the British period, the zamindari system turned agriculture into a sector of exploitation. In post-

Liberation Bangladesh, agriculture was in a state of collapse burdened by hunger, famine, and extremely low productivity. Guided by the philosophy that "agriculture must be the foundation of development," the government adopted policies to rebuild the sector.

To institutionalize agricultural research and extension, key organizations were established, including the Bangladesh Agricultural Research Council, Bangladesh Agricultural Research Institute, Bangladesh Rice Research Institute, and Bangladesh Agricultural University. Later on, other research & development organizations were established under the umbrella of National Agricultural Research System (NARS).

The results of these well-planned efforts led to a revolution in rice, wheat, and vegetable production from the 1980s onward. Today, Bangladesh is one of the world's leading food-surplus countries. In rice, vegetables, fish, meat, and dairy production, we now rank among the global frontrunners. Behind this transformation lie the hard work of millions of farmers, the innovations of agricultural scientists, and the strategic policy direction and leadership of the agricultural sector. Agriculture in Bangladesh is no longer just cultivation; it is now an integrated field driven by knowledge, science, and technology.

Past agriculture was labor-dependent. Modern agriculture is knowledge-driven. Research laboratories are developing high-yielding varieties, climate-resilient crops, organic fertilizer technologies, and ICT-enabled smart farming systems. Agriculture is moving from mere production to sustainable production—ensuring a balance among the environment, economy, and society.

Rice is the backbone of the country's food security. The Bangladesh Rice Research Institute has developed more than 120 high-yielding varieties. Salt-tolerant, drought-tolerant, and flood-tolerant varieties have solved longstanding cultivation challenges in coastal and adverse regions. These innovations have transformed Bangladesh into a "rice self-sufficient

nation." The growing popularity of improved vegetable and fruit varieties has turned them into export-oriented commodities.

Mechanization has driven a quiet revolution in Bangladesh's agriculture, accelerating the shift from manual labor to technology. Today, tractors or power tillers are used on nearly 90 percent of arable land, while combined harvesters and reaper machines are widely deployed for cutting, threshing, and drying rice. This transition is saving farmers time and labor and significantly reducing production costs.

The use of information technology in Bangladesh's agriculture is expanding rapidly. Farmers now receive crop disease diagnoses, market prices, weather forecasts, and government support through mobile devices. Using drone imaging, satellite monitoring, and remote-sensing data, soil and field health assessments are becoming more accurate. Bangladesh is gradually entering the era of Smart Agriculture and Agricultural 4.0, where artificial intelligence and internet-based tools enable precise disease detection, optimized fertilizer and water application, and market demand forecasting.

Agriculture in Bangladesh is no longer a male-dominated sector. Women are significantly contributing to seed sowing, transplanting, harvesting, processing, and marketing. A new generation of youth is embracing technology to build "smart agri-preneurship." E-commerce-based agricultural platforms, hydroponic farming, and other innovations are opening new dimensions in the sector.

Climate change remains the greatest threat to agriculture. In response, Bangladesh has developed a "Climate-Smart Agriculture" model, focusing on increased productivity, environmental protection, and farmer resilience. Salt-tolerant rice now grows in coastal areas, while floating gardens have emerged in flood-prone zones. In dry regions, drip irrigation and solar-powered agriculture are taking hold. Bangladesh's climate-

resilient agriculture model has earned international recognition.

However, major challenges persist. Arable land is shrinking, production costs are rising, and by 2050, nearly 30 percent of agricultural land may face climate risks. Sustainable agricultural strategies are the only path forward.

Despite agriculture being the backbone of the economy and national food security, farmers remain one of the most neglected groups. Nearly 40 percent of the labor force is engaged in agriculture, yet its GDP share is only 13-14 percent—evidence that farmers' labor is undervalued. They often do not receive fair prices. This imbalance is the greatest tragedy of rural life.

The marketing system remains dominated by intermediaries. Agricultural products pass through multiple layers before reaching consumers, leaving farmers with the smallest share. Due to inadequate storage and processing facilities, 25-30 percent of produce is lost annually. A well-designed agricultural insurance system could empower farmers to take productive risks.

The future of agriculture will be shaped by technology. Precision farming, smart greenhouses, drone-based delivery, bioinformatics, and AI-driven agricultural policies will redefine the sector. To remain competitive in the global market, Bangladesh must accelerate this technology-driven agricultural transformation. Ensuring fair prices through a "farmer-to-consumer" direct marketing system is equally essential.

Bangladesh's progress toward food self-sufficiency and economic growth has been built on the labor of its farmers. Protecting their dignity, security, and rightful earnings must be a national commitment. A sustainable, technology-driven, and farmer-centric agricultural system should be the central pledge of nation.

The writer is Senior Communication Officer, Bangladesh Rice Research Institute (BRRI)

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হাটহাজারীতে ব্রি স্যাটেলাইট স্টেশন

হাটহাজারী (চট্টগ্রাম) সংবাদদাতা :
চট্টগ্রামের হাটহাজারী উপজেলায় আসন্ন
বোরো ২০২৫-২৬ মৌসুমকে সামনে
রেখে আধুনিক কৃষি প্রযুক্তির ব্যবহার
সম্প্রসারণে উদ্যোগ নিয়েছে বাংলাদেশ
ধান গবেষণা ইনস্টিটিউট (ব্রি)
স্যাটেলাইট স্টেশন, চট্টগ্রাম।
এলএসটিডি প্রকল্পের অর্থায়নে
উপজেলার চারিয়া প্রযুক্তি গ্রামের আলী
সিকদার পাড়ায় কৃষি যন্ত্রপাতির
প্রায়োগিক পরীক্ষণ ও মূল্যায়ন কার্যক্রম
সফলভাবে সম্পন্ন করা হয়েছে।

এই কার্যক্রমের অংশ হিসেবে ব্রি
উদ্ভাবিত বীজ বপন যন্ত্র ব্যবহার করে সম
ঘনত্বে দ্রুতে ধানের বীজ বপন করা
হয়। এসব দ্রুতে উৎপাদিত চারা
পরবর্তী ধাপে ব্রি রাইস ট্রান্সপ্লান্টারের
মাধ্যমে স্থানীয় কৃষকদের প্রায় ১৫ বিঘা
জমিতে রোপণ করা হবে। এতে ধান
রোপণে সময় ও শ্রম সাশ্রয়ের পাশাপাশি
উৎপাদন ব্যয় হ্রাস পাবে বলে সংশ্লিষ্টরা
মনে করছেন।

কার্যক্রম চলাকালে উপস্থিত ছিলেন ব্রি
স্যাটেলাইট স্টেশন, চট্টগ্রামের
বৈজ্ঞানিক কর্মকর্তা মোছাঃ আমিনা
খাতুন। এছাড়া হাটহাজারী উপজেলা কৃ
ষি অফিসের উপসহকারী কৃষি কর্মকর্তা
মুহাম্মদ আবু তৈয়ব, মুহাম্মদ জহিরুল
ইসলাম ও নুরুল আবসারসহ প্রযুক্তি
গ্রামের বিভিন্ন এলাকার আগ্রহী কৃষকরা
অংশগ্রহণ করেন।

এ বিষয়ে বৈজ্ঞানিক কর্মকর্তা মোছাঃ
আমিনা খাতুন বলেন, আধুনিক
পদ্ধতিতে ধান চাষাবাদ ও কৃষি
যন্ত্রপাতির ব্যবহার সম্পর্কে কৃষকদের
উদ্বুদ্ধ করাই এ কার্যক্রমের প্রধান লক্ষ্য।
প্রযুক্তি গ্রামে আধুনিক কৃষিযন্ত্রের ব্যবহার
জনপ্রিয় করে সময় ও শ্রম সাশ্রয়ের
পাশাপাশি ধানের উৎপাদনশীলতা বৃদ্ধি
করাই এ উদ্যোগের মূল উদ্দেশ্য।