Smart Farmer Card: Digital Agriculture on the Path to Equity

Niaz Md. Farhat Rahman

Agriculture stands at the centre of Bangladesh's economy, food security and rural social structure. Millions of people's livelihoods are directly connected to this sector. Yet the farmer, the driving force of production, lives amid the greatest uncertainty and risk. At times it is cyclones, floods or untimely rainfall; at times rising production costs; at times falling market prices; and at times the dominance of middlemen. Altogether, the fair price due to farmers often remains beyond reach. Policy support, too, frequently fails to reach the actual beneficiaries properly. In this reality, introducing a secure and reliable farmer card system to ensure the sustainable development and protection of farmers has become an urgent necessity of our time.

However, merely distributing a card will not solve the problem. Its effectiveness will depend on an accurate and integrated digital farmer database. At present, there is no consolidated record of how many active farmers exist in the country, how much land each owns, or what crops they cultivate in which season. As a result, inconsistencies occur in subsidy distribution, weaknesses emerge in planning, and support often misses its intended targets. Modern agricultural management is not possible without data-driven agricultural administration. Therefore, a strong, secure and interoperable digital platform is required, where farmers' identities, land location and size, crop types, seasonal production data and socio-economic context will be stored.

This database would not only serve as an identity repository but also function as a "digital credit profile" for farmers. Consequently, banks and financial institutions would be able to assess farmers' production capacity and provide loans quickly and easily without collateral, increasing capital flow in the rural economy. Here emerges a new concept, "Financial Security for Farmers Through a Single Card". If the Farmer Card can be integrated with a bank-linked smart debit card, the same card would serve as a farmer's identity, a medium for receiving subsidies, a tool for loan transactions and a symbol of digital financial security. Through one card, subsidies, incentives, agricultural loans, insurance, compensation and payments for crop sales could be directly transferred to the farmer's bank account. Cash transactions would decline, leakage and corruption would be reduced, and farmers would become direct participants in the formal financial system.

The involvement of field-level agricultural extension officers is extremely important in building this database. They work directly with farmers and are familiar with ground realities. Through them, if data collection, verification and regular updates are ensured, a dynamic and reliable farmer database can be developed. This would move the agricultural sector toward planned and data-driven management.

It is noteworthy that limited work in this regard has already begun in the country. The government's proposed Farmer Card initiative is highly aligned with the existing digital infrastructure developed by the BRRI Agromet Lab. The lab has already created a geo-referenced farmer database platform. So far, nearly 100,000 farmers from 30 districts have been digitally registered and verified. Through this platform, farmers receive real-time weather forecasts, early warning alerts, and forecast-based crop advisories via weekly SMS and voice messages, supporting timely decision-making. Additionally, a digital call centre system has been launched that allows farmers to submit crop images via mobile phones for pest and disease identification and receive expert advice. In other words, a technologically tested and field-proven infrastructure already exists. If this experience is expanded nationally in an integrated manner, the implementation of the Farmer Card programme

would accelerate, duplication of efforts would decrease and significant savings in time and cost would be achieved. Utilising the BRRI Agromet Lab platform would enable a seamless transition toward an integrated, transparent and data-driven agricultural service system, enhancing administrative efficiency and climate-responsive farmer support.

However, although this infrastructure is operational, its scalability at the national level, system design refinement, integration with administrative structures, efficiency in targeted subsidy delivery, effectiveness of climate risk protection mechanisms and financial sustainability have not yet been fully evaluated. Therefore, a well-organised research initiative is needed to systematically integrate the existing digital infrastructure into the national Farmer Card system through planned design, testing and evaluation. The objective would be to build a transparent, accountable and climate-resilient agricultural governance structure that ensures long-term protection and development for farmers.

The proposed Farmer Card would be a machine-readable smart card. It would include the farmer's name, address, a unique number, card validity, and land and crop-related information. By using the card at the Upazila Agricultural Office, farmers could easily collect fertilisers, seeds and pesticides at fair prices. Currently, many genuine farmers do not receive the required inputs, while misuse occurs elsewhere. Allocating inputs in alignment with land and crop data would make subsidies targeted, transparent and effective. To ensure transparency in subsidy distribution, blockchain technology could be integrated. This would create an immutable digital record of every fertiliser or seed transaction, helping prevent irregularities or artificial shortages from dealer to field level. The Farmer Card could also play a significant role in disaster management. Farmers affected by cyclones, floods, or droughts could be quickly identified and provided with agricultural insurance or compensation. Administrative delays would decrease, and assistance would reach on time. Damage assessments would be data-based, ensuring transparency.

If the card is linked with mobile phones, its effectiveness would further increase. Farmers could instantly access local weather forecasts, recommended actions, current market prices, and necessary agricultural advice. Data-driven decision-making would make both production and marketing more planned. Knowing where better prices are available would make it easier to secure fair returns.

A longstanding problem for farmers in Bangladesh is the dominance of middlemen. Due to lack of market information and limited direct marketing systems, farmers are often forced to sell at low prices. A transparent digital marketing platform based on the Farmer Card could create direct linkages between producers and consumers, making markets more competitive and fairer.

Dividing farmers into four categories – landless, small, medium, and large – and determining benefits accordingly would make support more targeted. One uniform rule does not fit all; need-based assistance is the just path. This would ensure efficient resource use and proper targeting of beneficiaries.

Technology use will not stop here. Allowing farmers to send crop images via mobile for pest and disease diagnosis and advisory services would reduce production risks. The integration of digital agricultural services, data-driven decisions and transparent administration could form the foundation of a modern agricultural management system.

However, ensuring data security and privacy is essential in implementing this initiative. Strong cyber-security measures, clear legal frameworks and institutional coordination are required to protect farmers' personal data. This initiative must not remain merely a card distribution project; it should evolve into a structural reform of agricultural administration. Bangladesh has already made notable progress in digital transformation, as seen in national ID systems, mobile banking, and digital payments. The Farmer Card could be a logical extension of this trajectory. For long-term protection, parametric crop insurance could be linked with the card. In the event of natural disasters, insurance payouts could be automatically transferred to affected farmers' accounts based on card data, without bureaucratic delay. Successful implementation, however, will require coordinated efforts of political commitment, administrative efficiency, and technological capability.

In conclusion, the Farmer Card is not merely a plastic card; it could become a symbol of farmers' dignity, rights and equity. It could serve as the foundation of a data-driven, transparent and accountable agricultural system. To ensure fair returns for farmers' hard-earned labour and move agriculture toward sustainability, now is the time to implement a secure and reliable Farmer Card system. If this new chapter of digital agriculture succeeds, not only farmers but the entire nation will benefit.

The writer is Principal Scientific Officer (Weather & Climate Change Researcher), Agricultural Statistics Division, Bangladesh Rice Research Institute (BRRI). He can be reached at niaz.sust@gmail.com