JUST AGRICULTURE
multidisciplinary e-Newsletter

e-Agriculture: A Way Forward in Indian Agricultural System

Dr. Sravan Kumar Tamminana

Assistant Professor, Agricultural College, Jagtial,

Professor Jayashankar Telangana State Agricultural University, Telangana

ARTICLE ID: 029

Introduction

e-Agriculture is an internet platform aimed at promoting sustainable agricultural growth, value chain and food security by improving the use of information, communicate and associated technologies. It helps the farmers to have better access to information which increases productivity and further enables him to get better prices through market intelligence. The information related to policies and programs of government, schemes for farmers, institutions through which these schemes are implemented, new innovations in agriculture, Good Agricultural Practices (GAPs), Institutions providing new agricultural inputs (high yielding seeds, new fertilizers etc) and training in new techniques are disseminated to farmers through use of information technology to ensure inclusiveness and to avoid digital divide.

The adoption of digital technologies in India is still in its infancy. The future adoption of digital agriculture in India is anticipated to nurture under the Public-Private Partnership (PPP) mode. In India, there have been several initiatives by State and Central Governments to meet the various challenges facing the agriculture sector in the country. ICT is becoming the facilitator of socio-economic development in rural India with its obvious facilities by way of health, education, financial services and employment avenues, etc. It can help the bridge gaps by providing ‘e’ and ‘m’ services.

The e-Agriculture is part of Mission Mode Project, which has been included in NeGP (under National e-Governance Plan) in an effort to consolidate the various learnings from the past, integrate all the diverse and disparate efforts currently underway, and upscale them to cover the entire country. The concept of digital transformation has become ever more important since the outbreak of the COVID-19 pandemic, and various stakeholders have assisted in

JUST AGRICULTURE
multidisciplinary e-Newsletter

their respective capacities relying substantially on the digital component. The development of digitalization has become increasingly important for the achievement of the Sustainable Development Goals (SDGs) by 2030.

Current Initiatives under Digital Agriculture in India

- National Policy for Farmers, 2007

  The Government had constituted the National Commission on Farmers in 2004 under the chairmanship of Dr. M. S. Swaminathan. Based on the recommendations made by the Commission the "National Policy for Farmers, 2007" has been formulated and approved by the Government of India. It has important provision for use of Technology: New technologies which can help enhance productivity per unit of land and water are needed. Biotechnology, information and communication technology (ICT), renewable energy technology, space applications and nano-technology to provide opportunities for launching an "Evergreen Revolution" capable of improving productivity in perpetuity without harming the ecology.

- National Mission on Agricultural Extension and Technology

The aim of the Mission is to restructure and strengthen agricultural extension to enable delivery of appropriate technology and improved agronomic practices to farmers. This is envisaged to encourage aggregation of Farmers into Interest Groups (FIGs) to form Farmer Producer Organizations (FPOs).

- Bharat Nirman

It has registered the increased tele-density in rural areas. And it is this base which is being used to provide 'm' service to farmers, giving them right information at right time.

- Universal Service Obligation Fund (USOF)

  The USOF has launched wireless broadband Scheme in 2009. It is also funding the National Optical fibre network (NOFN), which is being managed by Bharat Broadband Network Limited. Pilot project scheme for Mobile values added services (m-VAS) for rural women's Self-Help Group (SHG) is also part of USOF's Sanchar Shakti programme. In this the SHG on the basis of their activities are

JUST AGRICULTURE
multidisciplinary e-Newsletter

provided with information in local languages through SMS, outbound dialers (OBDs) and Integrated Voice response system (IVRS).

- Kisan Credit Card

It uses the ICT to provide affordable credit for farmers in India. It was started by the Government of India, Reserve Bank of India (RBI), and National Bank for Agriculture and Rural Development (NABARD) in 1998-99 to help farmer's access timely and adequate credit. The Kisan Credit Card allows farmers to have cash credit facilities without going through time-consuming bank credit screening processes repeatedly. Repayment can be rescheduled if there is a bad crop season, and extensions are offered for up to four years. The card is valid for three years and subject to annual renewals. Withdrawals are made using slips, cards, and a passbook.

- Kisan Choupal

The Kisan Choupal in collaboration with Krishi Vigyan Kendra is a successful model in Bihar. It is being conducted in identified village on the basis of need assessment of the farmers by the scientists on agriculture and allied enterprises. At Kisan Choupal, the dialogue/ Discussion/ problems solving is facilitated with help of information technologies, showing technical videos to farmers, movies, etc. at the beginning of the Choupal. This has increased the awareness of farmers on cropping practices and new techniques. This has also facilitated better and wider reach of the technologies in the farmer community.

- Kisan Call Centre

An expert advisory system and the farmersneeds to call the toll free number 1800-180-1551 to seek expert advice on different matters related to agriculture and allied sectors.

- Kisan SMS Portal

The farmer keeps getting SMS messages providing information or delivering service or giving advisories on his mobile from experts, scientists and officers at various levels after once opting for messages on agricultural practices/ crops of his interest. The messages are customized based on farmer's preferences in the language chosen by them. The farmers can register themselves by calling the Kisan call centre on the toll free number or through web portal or even SMS based registration is also

JUST AGRICULTURE
multidisciplinary e-Newsletter

available. It sends messages relating not only production aspect but also marketing of produce, weather forecast, soil testing, etc.

- The Sandesh Pathak Application

  It was developed jointly by C-DAC Mumbai, IIT-Madras, IIIT Hyderabad, IIT Kharagpur, and C-DAC Thiruvananthapuram. It will enable SMS messages to be read out loud, for the benefit of farmers who may have difficulty in reading. It is usable by people who cannot read. A large population of farmers belongs to this category. The application will read aloud the content as and when they receive an SMS.

- Village Knowledge Centre (VKC)

  Village Knowledge Centre (VKC) serves as information dissemination centre providing instant access to farmers to latest information/ knowledge available in the field of agriculture, starting from crop production to marketing.

- Village Resource Centers (VRC)

  The VRCs conducts the programmes in the areas of Agriculture, Horticulture, Fisheries, Livestock, Water resources, Tele health care, Awareness programmes, Women empowerment, Supplementary education, Computer literacy, Micro credit, Micro finance, Skill development/ vocational training for livelihood support etc. The VRCs are connected to Knowledge/Expert Centres like Agricultural Universities, Skill Development Institutes and Hospitals.

- Direct Benefit Transfer (DBT) Central Agri Portal

The DBT Agri Portal launched in January 2013 is a unified central portal for agricultural schemes across the country. The portal helps farmers adopt modern farm machineries through government subsidies.

- National Agriculture Market (eNAM)

The National Agriculture Market (eNAM) is a pan-India electronic trading portal launched in April 2016 that links the existing Agricultural Produce Market Committee (APMC) mandis, to create a unified national market for agricultural commodities. eNAM helps farmers to sell their products without the interference of any brokers or mediators, by generating competitive returns from their investment.

- Agricultural Digital Infrastructure (ADI)

JUST AGRICULTURE
multidisciplinary e-Newsletter

This ADI is likely to play a vital role in the data pool that will be created by the Department of Agriculture under the National Agri Stack. The pilot project for this initiative has taken place at Kaithal (Haryana) and Morena (Madhya Pradesh). The ADI solution was developed by Cisco in August 2019, which enhances farming and knowledge sharing.

- JioAgri (JioKrishi)

  The JioAgri (JioKrishi) platform launched in February 2020 digitizes the agricultural ecosystem along the entire value chain to empower farmers. The core function of the platform uses stand-alone application data to provide advisory; the advanced functions use data from various sources, feed the data into AI/ ML algorithms and provide accurate personalized advice.

- AgriStack

  AgriStack' is a unified platform to provide end-to-end services across the agriculture food value chain to farmers. In June 2021, The Ministry of Agriculture and Farmers Welfare signed a MoU with Microsoft in June, 2021 to run a pilot programme for 100 villages in 6 states. Under the MoU, Microsoft will create a 'Unified Farmer Services Interface' through its cloud computing services. In this a unique IDs will be created for farmers across the country to integrate it with various government schemes and create digital agricultural ecosystems.

- Digital Agriculture Mission

The Digital Agriculture Mission 2021–2025 aims to support and accelerate projects based on new technologies, like AI, block chain, remote sensing and GIS technology and use of drones and robots. The Union Minister of Agriculture & Farmers Welfare, Mr. Narendra Singh Tomar, has initiated the mission in September 2021 to forward digital agriculture through pilot projects.

- e-Choupal 4.0

  ITC has proposed to create a personalized **'Site Specific Crop Advisory'** service to turn conventional crop-level generic advice into a personalized site-specific crop advisory for farmers, using a digital crop monitoring platform, hosted on ITC's e-Choupal 4.0 digital platform in 2018.

JUST AGRICULTURE
multidisciplinary e-Newsletter

Application of e-Agriculture

- Technological interventions, such as remote sensing, soil sensors, unmanned aerial surveying and market information, etc., enable farmers to collect, visualize and assess crop and soil health conditions at different stages of production, in a cost-effective manner. They can act as an initial indicator to identify potential challenges and provide options to deal with them in a timely manner.
- With Artificial Intelligence/ Machine Learning (AI/ML) algorithms, real-time actionable insights can improve crop yield, control pests, assist soil screening, provide farmers with actionable data, and reduce their workload.
- The technology of blockchain allows for the tamper-proof and precise tracking of farms, inventory, and payments. Hence, farmers do not have to rely on paperwork or files to record and store important information.
- Use of drones for controlled and standard application of fertilizers and chemicals.

Conclusion

Agricultural and allied sectors in India are on the verge of adopting modern technologies, such as IoT, AI/ML and agri-drones for unmanned aerial surveys, and Indian and foreign agritech companies can play a key role in supplying advanced technologies to farmers. With few players in the market, catering to 150 million farmers in a country provides a tremendous opportunity for private and foreign companies to expand their operations. Regardless, technology affordability, easy access and operation, easy maintenance of systems, and supportive government policies will define the success of digital agriculture in India.