

TECHNOLOGY



Critical Role For Paradigm Shift

“Youths as agri-preneurs, technological agents, input and knowledge providers will make all the difference in achieving our food and nutritional security”

Agriculture is the backbone of Indian economy. The agribusiness ecosystem significantly contributes to the socioeconomic fabric of India.

Over the last few decades, agriculture sector has progressed by leaps and bounds. Currently valued at \$370 billion, agriculture is one of the major contributors to the country's GDP. According to the Economic Survey 2020-21, GDP contribution by theW agriculture sector was 19.9 per cent. The agriculture sector has to grow at around 6.0 per cent in order to effectively contribute 1 trillion towards US\$ 5 trillion projected economy by the Hon'ble Prime Minister of India. Agriculture is also the largest employer, with over half the population engaged in agriculture and related activities and it is one of the sectors that has embraced the use of cutting-edge technologies, especially by involving youth (including women) as agritech startups and enlightened farmers.

Agriculture Faces Second Generation Problems

Despite remarkable achievements like Green, White and Blue Revolutions, agriculture is faced today with second generation problems of factor productivity decline, deteriorating soil health, depleting water table, loss of agrobiodiversity, besides adverse impact of climate change. By 2030, we need to meet sustainable development goals (SDGs), especially no poverty and zero hunger. Also to feed additional population of about 15 million per year, we shall have to produce additional 5 million tons of food annually.

The economic impact of catastrophic weather events and the social pressures including the recent push for natural and organic farming – all these demand game changing initiatives towards sustainable farm practices with reduced use of fertilizers, chemicals, water, energy etc.

In view of above, paradigm shift becomes critical for farmers to diversify agriculture that is sustainable, diversified and efficient as well as economical. Youths as agri-preneurs, technological agents, input and knowledge providers will make all the difference in achieving our food and nutritional security.

In this context, the use of artificial intelligence (AI), machine learning (ML), big data, internet of things (IoT), sensors, drones and new technologies for secondary and specialty agriculture could help increasing yields, improving efficiency of water and other input uses, and build much needed resilience for higher income by the farmers. This will be a game changer for agri-preneurship and much needed motivation and attraction of youth in agriculture (MAYA).

Emphasis On FPOs, GAP

With the Government resolve to double the farmers' income, important game changer now is to have a shift from “Krishi Pradhan Desh” to “Krishak Pradhan Desh” since 58 per cent of our population is still dependent on agriculture and allied sectors. Government efforts to establish large number of Farmer Producer Organisations (FPOs) throughout the country, and emphasis to convert subsidies into incentives for diversified and good agricultural practices (GAP) will also be the real game changer for linking farmers to the market and to avoid distress sale. Another game changer currently is the emergence of private enterprises such as Big Basket, Reliance Mart, Walmart, Amazon and startup as 'Agri 10X', 'DeHaat', etc. These do connect farmers directly to buyers on a single platform benefitting both sides as win-win, Smart farming like use of sensors and automated micro-irrigation practices can help monitor agricultural land, crops, temperature and soil moisture resulting in higher crop yields. In this regard, agri-based and tech-driven startups have been quite innovative in assisting farmers and revolutionising farming practices. Climate-smart farming is another game changer to ensure certainty and predictability.

Maximizing Farm Output

In order to maximize the farm output, there are new game

changers that can help assessing the market trends, predict yearly outcomes, and consumer needs so that the farmers are efficiently able to produce timely and maximize their returns. AI-powered chatbots/chatGPT platforms, AI along with machine learning (ML) techniques will enable to interact with users/consumers in more personalized way. Moreover, AI/ML algorithms can generate real-time actionable insights to help improve crop yields, predict pest emergence, assist in soil testing, and provide actionable data for farmers to reduce their workload. Blockchain technology offers tamper-proof and precise data about farms, inventories, quick and secure transactions and food tracking.

Thus, the scientists, entrepreneurs and farmers need not be dependent now only on recorded data stored in files.

Recently, five MoUs have been signed with CISCO, Ninjacart, Jio Platforms Limited, ITC Limited and NCDEX e-Markets Ltd (NeML), to promote digital agriculture through pilot projects. Gol'sJio Agri (JioKrishi) platform (2020) at Jalna and Nashik (Maharashtra) will digitise the agricultural ecosystem along the entire value-chain to empower farmers by providing advisory that is both accurate and personalised.

ITC's e-Choupal 4.0 digital platform 'Site Specific Crop Advisory' at Sehore and Vidisha (Madhya Pradesh) will give personalised site-specific crop advisory to farmers. Gol's 'Digital Agriculture Mission 2021–2025' aims to support and accelerate projects using these novel technologies. Moreover, electronic National Agriculture Market (eNAM) could also help the farmers to sell their products without the interference of any brokers or mediators, by generating competitive returns from their investment.

Tech Shall Transform

The 'Direct Benefit Transfer (DBT) Agri Portal' is a unified central portal for agricultural schemes across the country which helps farmers adopt modern farm machineries through government subsidies. With GPS driven precision farming equipment, new ways have been developed to make farming more efficient and grow more food. The work is going on to find new ways to irrigate crops or breed more disease resistant varieties.

5G technology will facilitate geo-location services and real-time connectivity to communicate information on animal health, fertility, and feed and fodder intake. It will also help livestock owners to reduce their overall cost on livestock management for their improved performance. These technological options will definitely prove to be the game changers for Indian Agriculture.

Dr RS Paroda
Padma Bhushan Awardee, is Chairman, TAAS and Former Secretary, DARE & DG, ICAR