New technologies for farming

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A large percentage of the Indian population is dependent on agriculture. Agriculture, apart from being the highest employing sector in India, is the largest contributor to the country's GDP.

The country has made rapid progress in agriculture through the Green Revolution. However, the impact of the Green Revolution remained confined to certain Indian states. Additionally, the Economic Survey, 2017-18, highlighted that the percentage of agricultural workers of the total workforce would drop to 25.7% by 2050 from 58.2% in 2001. Therefore, there is a need to enhance the level of farm mechanisation and automation that is prevalent in the country.

Problems in agriculture

In Kurukshetra (Vol.62, June 2014), the monthly journal of the Ministry of Rural Development, Sabita Kumari, a lecturer of the Home Science Department of R.K. College, Madhubani, discusses the problems of Indian agriculture. She writes that the current agricultural practices are neither economically nor environmentally sustainable and India's yield for many agricultural commodities are still quite low. Poorly maintained irrigation systems and lack of good extension services are among the factors that are responsible for the poor situation. Farmers' access to markets is hampered by poor roads, rudimentary market infrastructure and excessive regulations.

New technologies in Indian farming

The Union Minister of State for Agriculture, Tariq Anwar has gone on record stating that, as per estimates by the Central Statistics Office, the share of agricultural products in the country's GDP was 51.9% in 1950-51 and has come down to 13.7% in 2012-13. That contribution is abysmally low for a sector that employs more than 50% of the country's population. However, this is mainly due to the farmer's inability to generate income from their crops and curb their growing indebtedness.

Some start-ups and agro companies have come up with innovative technologies for the improvement of farming in India. Here are some innovations.

Barrix Ago Sciences – The Bangalore-based start-up offers eco-friendly crop protection methods that support organic farming and helps to increase crop production and quality with minimal expenditure.

► Barrix Catch Fruit and Fly Lure + trap: Toxic pesticides contaminate water, soil and leave behind harmful residue. This pheromone-based pest control trap have artificially synthesised smelling agents that attract and trap pests. Instead of eating the crops, the pests are attracted to the pheromones in the trap.

► Fly pest sticky sheet: Barrix uses bright yellow and blue coloured recyclable sheets of wavelengths between 500nm and 600nm which are proven to effectively attract and trap at least 19 high-risk pests from a long distance.

Anulek Agrotech – Set up by Mumbai-based entrepreneurs, Anulek focuses on increasing soil fertility to achieve higher agricultural productivity and crop yield with lower resource use.

► BIOSAT (Biochar based organic Soil Amendment Technology): The product is a soil additive and is made of biochar mixed with different organic nutrients. The product preserves soil fertility, traps carbon emissions, maintains topsoil strength and increases crop production and reduces dependency on chemical fertilisers.

Mitra – This is a Nashik-based start-up that aims to improve mechanisation at horticulture farms.

► Air blast sprayers developed for fruits and vegetables in general and grapes and pomegranates in particular. The sprayers are used to add hormones that help the growth of

crops and also help in reducing the expenditure on manual labour and save time.

CropIn Technology Solutions – This was founded in Bangalore by a software engineer. It provides agricultural businesses the technology and expertise to create a smarter and safer food supply chain for consumers around the world.

► CropIn offers information on a cloud-based platform, integrated with a mobile app. It allows large food companies to track the growth of crops on farms around the country with details about what the crop is and the conditions it is grown in to help companies remotely monitor farms, interact with farmers and make every crop transparent and traceable. It also aids farmers in adopting global agricultural practices and improves productivity by offering productivity insights and harvest forecasts.

Eruvaka Technologies – This is an organisation based in Vijayawada, Andhra Pradesh. Its mission is to accelerate the use of technology in aquaculture, an area where farmers face problems due to unavailability of adequate technology to measure and control water health.

► The organisation aims to help farmers monitor aquaculture ponds, develops solar-powered flouting buoys that measure different water parameters, such as oxygen levels, temperature and pH range which are crucial for the growth and survival of fish and shrimp.

Skymet – Skymet is India's largest weather monitoring and agricultural risk solution company. They are specialised in measuring, predicting and limiting climatic risks.

►Launched to aid farmers, Skymet's weather website offers services such as weather forecast, crop insurance and agricultural risk management. Prediction of weather conditions can help to prepare farmers for drought or heavy unseasonal rainfall.

Ekgaon – This is a Gujarat-based venture that started in 2001. It is an IT based network integrator that provides a technology platform and offers a range of services to farmers in rural areas including financial, agricultural inputs and government assistance.

►Financial : A mobile phone enabled financial services delivery platform, it provides information on microfinance institutions and banks for delivery of door-step services such as credit, savings, remittance, insurance, mortgage etc.

►Agricultural: Offered in Hindi, Gujarati and Tamil languages, the system uses mobile, voice recognition, interactive voice response system (IVRS) and web technologies to provide information on weather, commodity market prices, soil nutrient management and crop management.

►Citizen : The web and mobile applications help citizens monitor the delivery of government programmes and services entitled to them.

Digital Green – It is a not-for-profit international development organisation that focuses on training farmers to make and show short videos where they record their problems, share solutions and highlight success stories as part of a community engagement exercise to improve the lives of rural communities across South Asia and Sub-Saharan Africa.

►It uses technology-enabled behaviour change communication that is cost-effective, scalable and brings together researchers, development practitioners and rural communities to produce and share locally relevant information through videos.

FrontalRain Technologies – This Bangalore-based agri-tech start-up seeks to deliver affordable advanced technology solutions for emerging companies and take technology to remote corners of the country.

►The company is offering Rain+, a comprehensive suite of products on the cloud for food and agrobusinesses. It can help companies at every stage of the value chain, starting from growing, processing, logistics, wholesale trade, retail trade and exports.

AgroStar - This is a Pune-based 'direct to farmer' m-commerce platform which strives to provide quality agricultural inputs.

►AgroStar enables farmers to produce a range of agricultural goods such as seeds, crop nutritional products, crop protection and agricultural hardware products by simply giving a missed call on the company's toll-free number.

Foreign endeavours

India and Israel are set to jointly develop new crop varieties and share post-harvest technologies following the success of the 10-year-old Indo-Israeli Agriculture Project (IIAP) whose accomplishments include growing cherry tomatoes in Haryana, rejuvenating mango orchards in Maharashtra and demonstrating to Indian farmers the effectiveness of state-of-the-art irrigation technologies.

The agricultural cooperation project was initiated in 2008 with an objective of sharing best practices and technical knowledge. The implementing partners for the project are the National Horticulture Mission (NHM) under the agriculture ministry, MASHAV, Israel's agency for international development cooperation and Indian state governments which help set up centres of excellence as per their local needs.

"Our goal is to help Indian farmers by exposing by exposing them to new technologies tailored to their local needs", said Dan Alluf, counsellor of science and agriculture at MASHAV, Delhi. "There is a lot of focus on drip irrigation and how to design better farms by using canopy management and use of improved irrigation and fertigation technologies", Alluf said, adding "Each centre showcases a range of greenhouses to farmers depending on their needs and capabilities. A unique focus is to teach farmers the language of irrigation – when to irrigate and by how much – to increase water efficiency." ■