

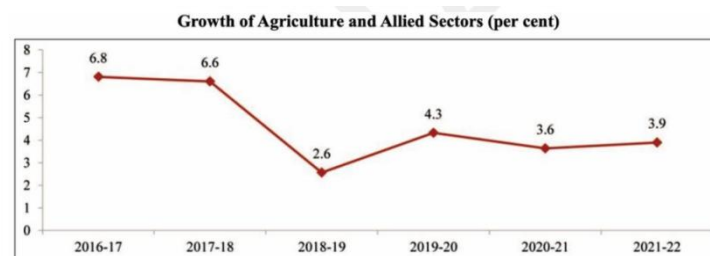
Article Id  
 AL04164

## CATALYZING INDIA'S AGRICULTURE THROUGH DIGITALIZATION

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As digital awakening sets in, India is touching heights for different courses of opportunities and challenges in progress towards digitalization. Digital India week 2022 programme has clearly demonstrated the importance of digital platforms which have sorted ease of life to citizens. Digital India aims to provide the much needed push in the field, namely agriculture, highways, e-governance, broadband, public interest access programme etc. The agriculture and allied sectors grew at a positive rate of 3.6 per cent during 2020-21 and 3.9 per cent in 2021-22 with GVA in agriculture 18.8 in 2021-22.



Source: First Advance Estimates of National Income, 2021-22

A considerable amount of progress can be seen in agriculture sector due to intervention of government policies, strategies and improved farming technology and recent incorporation of digital technology in farming has led to acceleration in the growth of agriculture.

The Ministry of Agriculture & Farmers Welfare aims to improve **awareness**, **knowledge** and **efficiency** of farmers. The former Information Technology Division was reoriented to become the Digital Agriculture Division with the overarching objective of raising farmers' incomes in mind and in accordance with the suggestions of the Doubling of Farmers Income (DFI) committee.

## Further Steps Taken by Government are as Follows

1. Kisan Drones
2. Remote sensing
3. IDEA concept
4. KCC
5. Farmer's Portal
6. Mobile Apps
7. M kisan

### 1. Kisan Drones

Kisan Drones will be **used to boost the agricultural sector** in the country which use of will be promoted for crop assessment, digitization of land records and spraying of insecticides and nutrients. However, the Kisan Drone Suvudha has added a new chapter in the farming sector and it will prove to be a milestone for drone technology. Prime minister in the budget 2022 introduced off "Drone Kisan Yatra" to promote chemical-free farming in India to ensure inclusive drone improvement. This year guidelines of the "Sub-Mission on Agricultural Mechanization" (SMAM) scheme was incorporated in a move aimed at making drones more accessible to the farmers. The Kisan drone will have an unmanned tank filled with insecticides and nutrients. They are expected to have a high capacity of 5 to 10 kg. The drone will spray the same amount of pesticide on about one acre of land in just 15 minutes. Time will be saved, less work will be needed, and spraying will be done consistently. They will also be utilized to transport produce from farms, such as fruits, fish, and vegetables, to markets. Farmers and fishermen will make more money because these products will be delivered directly to the market with little to no harm and in a shorter amount of time. Thus this initiative under digital India will increase the efficiency of production in the agricultural sector in India.

**Recent example:** Drones are being used in India to combat locust infestations, which have been regularly assaulting and ruining sizable portions of the country's crops since the winter of 2019–20. Drones are being used by the agriculture ministry's at both the federal and state levels to spray for locusts. In an otherwise difficult situation when India faces significant crop losses in the states of Rajasthan, Gujarat, Madhya Pradesh, and Uttar Pradesh, they are proving to be an efficient answer.

## 2. Remote Sensing Application in Agriculture

The remote sensing technique is used in Crop production forecasting, Assessment of crop damage and crop progress in the field of Horticulture, Cropping Systems Analysis, to know the Non-point source of pollution, to study the Impact of Climate Change on Agricultural System, to study Biophysical parameter retrieval and process modelling and in Demonstration of technique for forewarning Pests and Diseases. However, remote-sensing technology provides many advantages over the traditional methods in agricultural resources survey In crop classification, crop monitoring and yield assessment of crops. Remote sensing plays a role in Assessment of vegetation cover, in nutrient use and requirement of water status, especially in semi arid and arid areas, identification of weed and its management, crop-evapotranspiration status, pest and disease infestation status. Thus , with the help of digitalization in India we are able to reinforce the technology of remote sensing in future analysis of agricultural sciences. The Ministry of Agriculture and Farmers' Welfare (MoA&FW) effectively uses satellite remote sensing to gather crop statistics data required for the planning and decision-making of agricultural inputs. In comparison to conventional methods, remote sensing data has a number of benefits, including quicker decision-making processes, better coverage, and economic gains. Numerous crucial parts of crop production use space data.

For the best crop cutting experiment (CCE) plan and improved yield estimates using high-resolution remote sensing photos from satellites and UAVs, the MNCFC launched the "KISAN" (Farmer) project in 2015. A number of variables, including the sowing date, NDVI (Normalized Difference Vegetation Index), Biomass, and Leaf Area Index (LAI) collected by remote sensing, were used to determine the sites of CCEs.

## 3. IDEA Concept

IDEA(IndEA Digital Ecosystem of Agriculture) concept is the Adoption of a holistic ecosystem approach to address the multiple challenges faced by the agriculture sector in regard to growth to fulfil the goals like Doubling Farmers Income and achieving the SDG's, Millennium development goal, achieving new climate target on renewable energy expansion, its target for nationally determined contribution (NDC) commit of 40 percent non fossil based.

The following are the goals of the National Digital Agriculture Ecosystem;

- To help farmers increase their income and profitability by giving them access to the correct information at the right time and through cutting-edge services.
- To make it possible for the Central and State governments, the corporate sector, and Farmers Producer Organizations to develop and carry out their policies, plans, and schemes more effectively (FPOs)
- To increase productivity in the use of resources, such as land, water, seeds, fertilizers, pesticides, and farm mechanization, by making information more easily accessible.
- Specific and customized extension services across the farm lifecycle are available, and personal data privacy is also protected.
- To increase capabilities across the spectrum of precision agriculture and digital agriculture
- To encourage the adoption of standards for ecosystem-wide information exchange and interoperability while maintaining effective management of digital rights.
- Encourage agricultural R&D and innovation by providing access to high-quality data.
- To work with the states and union territories to realize the IDEA's vision while embracing the best cooperative federalism principles.
- To develop PPP frameworks and use them to realize the "power of the digital"

#### **4. Kisan Credit Card**

The Kisan Credit Card has evolved as a cutting-edge credit delivery method to quickly and easily meet the farmers' needs for production credit. The programme is being implemented throughout the entire nation via a broad institutional credit structure made up of Commercial Banks, RRBs, and Cooperatives, and it has earned widespread support from both bankers and farmers. Studies carried out by NABARD and recommendations made by several Committees that the GOI formed also support this assertion. Therefore, it was thought important to review the current KCC Scheme in order to make it truly straightforward and hassle-free for both farmers and bankers. A Working Group was subsequently established by the then-Ministry GOI's of Finance to evaluate the KCC Scheme.

The Kisan Credit Card Scheme seeks to provide timely and adequate credit support from the banking industry. system with a single point of contact for the farmers' cultivation and other requirements as listed below:

- To fulfill the short-term finance needs for agricultural farming
- costs following harvest
- Loan for Produce Marketing
- consumption needs for a household of farmers
- Working capital for agriculturally related operations, such as maintaining farm equipment and dairy products, inshore fisheries, etc.
- The need for investment loans in agricultural and related businesses, such as pump sets, dairy animals, sprayers, etc.

The programme was launched in 1998 to give farmers access to sufficient and timely credit support from the banking system through a single window with a flexible and streamlined process for their farming operations as well as other needs like the purchase of agricultural inputs like seeds, fertilizer, pesticides, etc. and cash withdrawals for their production requirements. In 2004, the program's scope was expanded to include farmers' needs for investment loans for ancillary and non-farm operations. The extension of the Kisan Credit Card (KCC) programme to farmers engaged in fisheries and animal husbandry was announced by the government as a way to assist them in meeting their working capital needs in the Budget 2018–19. Around 25 lakh applications had been approved for Nationwide Fishery KCC as of June 2020. The government has declared that as part of the Atma Nirbhar Bharat Package, 2.5 crore farmers will be covered by the Kisan Credit Card (KCC) scheme with a credit boost of Rs. 2 lakh crores thanks to a special saturation effort.

A significant milestone goal of covering more than 1.5 crore farmers under KCC with a sanctioned loan ceiling of Rs. 1.35 lakh crore has been reached as a consequence of coordinated efforts. Thus digital India is helping India to achieve milestones.

## **5. Farmers Portal**

Farmers' Portal is an attempt in the direction of creating one stop shop for meeting all information relating to Agriculture, Animal Husbandry and Fisheries sectors production, sale/storage of an Indian farmer. Farmers portal, a place where the farmers will be able to get all relevant information regarding specific subjects around his village/block /district or state. This is the backbone of all mobile apps and SMS advisories. This information can also be explored in more detail by using the visual version of the India map that is displayed on the homepage. An important feature of this web based portal is that one can drill up to the block

level and get information for each block. Information regarding all stages of crop management right from sowing of seeds till post harvesting, is also provided in the portal.



Source: farmer.gov.in

## 6. Mobile Apps

It is clear that information and communication technologies (ICTs) have the potential to make it easier for farmers to access and share information. Mobile phone use has increased among ICTs, which is altering the way that agriculture communicates. New services and applications have emerged as a result of the adoption of mobile phones. These include access to market information, weather information, plant health monitoring, education and e-trading

Different mobile applications in use are as follows Kisan Suvidha, Pusa Krishi, Soil Health Card mobile app, Crop cutting Experiments-Agri Mobile App, Bhuvan Hailstorm App, Crop insurance, Krishi Video Advice Mobile app, Plantix, IFFCO Kisan Agriculture, APEDA Farmer Connect, Shetkari Malik Android App, Krishi Vigyan, Haaamana Krishi , e-NAM Mobile App, AgriMarket, Digital Mandi India, Loop, riceXpert, expert system for various crops and allied sector apps include Pashu Poshan, Cattle expert systems, mKrishi Fisheries app, avimitra, Ag. MachineryRent Calculator, e-kalpa, Kheti Sewa, Kheti-Gyan, Gene bank app etc.

## 7. M kisan-Use of Mobile Telephony

M Kisan portal was launched by the President of India in 2013 and more than 2462 crore SMS's have been sent till date. It is a portal where the farmers get connected to officials and scientists who can send targeted text and voice based on advisories for issues related to agriculture and allied sectors. Though there is a penetration of smartphones with internet in rural areas but the best option is mobile telephony for the dissemination of information to farmers. A portal has been developed by the department m kisan (mkisan.gov.in), where around 5.2crore farmers are registered and experts and scientists from different departments

like India Meteorological Department (IMD), Indian Council of Agricultural Research (ICAR), State Government, State Agriculture Universities which send information to farmers on regular basis in 12 different languages. Based on the State, District, Block and the Crops/Activities selected by respective farmers, they are grouped accordingly. The portal provides with information related to weather such as rainfall, temperature etc which helps the farmer to make decisions regarding the choice of seed varieties, time of sowing, when to harvest etc. It also provides information regarding market which enables the farmers to stay updated with prevailing market prices, the quantity demanded in the market and better informed regarding selling their produce at right place and right time and also helps to save the farmers from distress sale. Some web services have been already registered with SMS Portal such as Kisan Call Centre, market prices, fertilizer testing, Buyer Seller Interface etc and many more are yet to be.



Source: mkisan.gov.in

## Conclusion

Government Proposes digital India act, which is anticipated to replace the Information Technology Act of 2000. The IT Ministry is debating whether to make doxing a crime under the new Act. New and emerging technologies like blockchain and artificial intelligence will be regulated under the new Act. The planned Digital India Act will be responsible for regulating e-commerce and cybercrime legislation. The replacement of the IT Act, 2000 with the Digital India Act is a measure that will boost the nation's digital ecosystem and cyber-security environment. However, it is urgently necessary to implement laws in a timely manner while also efficiently resolving any problems that arise during the legislative process.

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