Digital Agriculture

Why in News

Recently, the **Ministry of Agriculture and Farmers Welfare** signed 5 Memorandums of Understanding (MOUs) with private companies for taking forward **Digital Agriculture.**

- These pilot projects are **part of the Digital Agriculture Mission** and will **draw on the National Farmers Database** which already includes 5.5 crore farmers identified using existing national schemes.

Key points

- **Digital Agriculture:**
  - **About:** Digital Agriculture is **"ICT (Information and Communication Technologies) and data ecosystems** to support the development and delivery of timely, targeted information and services to make farming profitable and sustainable while delivering safe nutritious and affordable food for all."
  - **Examples:**
    - **Agricultural** biotechnology is a range of tools, including traditional breeding techniques, that alter living organisms, or parts of organisms, to make or modify products; improve plants or animals; or develop microorganisms for specific agricultural uses.
    - **Precision agriculture (PA)** is an approach where inputs are utilised in precise amounts to get increased average yields, compared to traditional cultivation techniques such as agroforestry, intercropping, crop rotation, etc. It is based on using ICTs.
    - Digital and wireless technologies for data measurement, Weather monitoring, Robotics/drone technology, etc.
  - **Benefits:**
    - Increases agriculture productivity.
    - Prevents soil degradation.
    - Reduces chemical application in crop production.
    - Efficient use of water resources.
    - Disseminates modern farm practices to improve the quality, quantity and reduced cost of production.
    - Changes the socio-economic status of farmers.
  - **Challenges:**
    - **High Capital Costs:** It discourages the farmers to adopt digital methods of farming.
    - **Small Land Holdings:** Indian farms are very small in size and 1-2 acres farm plots are the most common. Also, agricultural land leasing under various arrangements is widely prevalent in India.
    - **Renting and Sharing Practices:** Due to both limited financial resources and small farm plots, renting and sharing platforms rather than outright purchase for equipment and machinery like tractors, harvesters etc.
    - **Illiteracy in Rural Area:** The lack of basic computer literacy hinders the fast development of e-Agriculture.

- **Related Government Initiatives:**
  - AgriStack**:** The **Ministry of Agriculture and Farmers Welfare** has planned creating 'AgriStack' - a collection of technology-based interventions in agriculture. It will create a unified platform for farmers to provide them end to end services across the agriculture food value chain.
  - **Digital Agriculture Mission:** This has been **initiated for 2021 -2025** by the government for projects based on new technologies like artificial intelligence, block chain, remote sensing and GIS technology, use of drones and robots etc.
  - **Unified Farmer Service Platform (UFSP):** UFSP is a combination of Core Infrastructure, Data, Applications and Tools that enable seamless interoperability of various public and private IT systems in the agriculture ecosystem across the country. UFSP is **envisaged to play the following role:**
    - Act as **a central agency** in the agri ecosystem (like **UPI** in the e Payments)
    - Enables Registration of the **Service Providers** (public and private) and the **Farmer Services.**
    - Enforces **various rules and validations** required during the service delivery process.
    - Acts as a **Repository of all the applicable standards,** API's (Application Programming Interface) and formats.
    - Act as a **medium of data exchange** amongst various schemes and services to enable comprehensive delivery of services to the farmer.
  - **National e-Governance Plan in Agriculture (NeGP-A):** A **Centrally Sponsored Scheme**, it was **initially launched in 2010-11 in 7 pilot States,** which aims to achieve rapid development in India through use of ICT for timely access to agriculture related information to the farmers.
    - In **2014-15,** the scheme was further extended for all the remaining States and 2 UTs.
  - **Other Digital Initiatives:** Kisan Call Centres**,** Kisan Suvidha App**,** Agri Market App**,** Soil Health Card (SHC) Portal, etc.

Way Forward

- The use of technology has defined the 21st century. As the world moves toward quantum computing, AI, big data, and other new technologies, India has a tremendous opportunity to reap the advantage of being an IT giant and revolutionize the farming sector. While the **green revolution** led to an increase in agricultural production, the IT revolution in Indian farming must be the next big step.
- There is a need to **build a robust digital infrastructure** in the country consisting of satellite imaging, soil health information, land record, cropping pattern and frequency, market data, and others.
- **Data efficiency can be increased** through - Digital Elevation Model (DEM), Digital Topography, Land Use & Land Cover, Soil Map, etc.

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