Revamping Crop Data Collection by E-technology

For Prelims: Digital Crop Survey and Digital General Crop Estimation Survey (DGCES), Remote Sensing, Crop Maps, Crop Surveys, Agricultural Regions, Geotagging, GPS, Space Application Centre, Indian Agricultural Research Institute, National Sample Survey Office, Digital Skills, NGOs, World Census of Agriculture (WCA), Food and Agriculture Organization (FAO)

For Mains: Significance and Need of Updated Crop Estimation Data in Policy Making.

Source: TH

Why in News?

Recently, the Union government urged states to swiftly adopt and implement the **Digital General Crop Estimation Survey (DGCES), Digital Crop Survey** and **Revamped FASAL Programme** to improve **farm production estimates** and enhance data accuracy.

- It aims to enhance the **accuracy, reliability and transparency** of agricultural statistics which will help in policy formulation, trade decisions and agricultural planning.

What are the New Initiatives Launched for Revamping Crop Data Collection?

- **Digital General Crop Estimation Survey (DGCES):** It is a nationwide initiative that uses a **mobile app and web portal** to assess crop yields and improve agricultural practices in India.
  - It aims to calculate yield based on scientifically designed **crop cutting experiments** for all major crops across the country.
  - It includes features such as **GPS-enabled photo capture**, **automated plot selection**, and **geo-referencing** to enhance transparency and accuracy.
- **Digital Crop Survey:** It is a technology-driven initiative designed to provide detailed and accurate crop data through **digital means**.
  - It aims to enhance the **precision of crop area** estimation and other related agricultural statistics.
  - **Key Features Include**:
    - **Geotagged Data**: Uses **geotagging** to record the exact locations of crop plots, ensuring accurate area measurement.
    - **Digital Documentation**: Employs digital tools and platforms for data collection, reducing reliance on manual methods.
    - **Real-Time Updates**: Provides near **real-time information** about crop areas, allowing for more timely and accurate assessments.
- **Revamped FASAL Programme:** **Forecasting Agricultural output using Space, Agro-meteorology and Land based observations (FASAL)** leverages **remote sensing** technology to generate accurate crop maps and area estimation for major crops.
  - **Mahalanobis National Crop Forecast Centre (MNCFC)** of the Department of Agriculture & Farmers' Welfare regularly generates **crop forecasts** at the District/State/National level for major crops.

- **Unified Portal for Agricultural Statistics (UPAg Portal):** The **UPAg Portal** serves as a **centralised hub** for near real-time information on crop production, market trends, pricing, and other vital agricultural data.
    - It allows for the **cross-verification** of data from multiple sources, ensuring robust agricultural statistics.
- **Yield Forecast Model:** The Ministry of Agriculture & Farmers Welfare is collaborating with various institutions, including the **Space Application Centre** and the **Indian Agricultural Research Institute**, to develop yield forecast models.
- **Supervision:** The Ministry of Agriculture & Farmers Welfare is working with the **Ministry of Statistics and Programme Implementation** to increase the supervision of crop-cutting experiments by the **National Sample Survey Office**.

What is the Need for a New Mechanism to Collect Crop Data?

- **Real-Time Monitoring:** Conventional methods may not provide **timely updates** on crop conditions and **production estimates**.
    - In the event of unexpected weather conditions or pest outbreaks, **real-time data** is **crucial** for timely intervention and **accurate assessment**.
- **Integration of Advanced Technologies**: Lack of integration with modern technologies limits the effectiveness of current data collection methods.
    - The **Digital Crop Survey and Digital General Crop Estimation Survey (DGCES)** leverages advanced technology to provide **geotagged**, plot-level data, which enhances precision.
- **Enhancing Data Reliability**: Initiatives and programs that use **remote sensing** can create accurate **crop maps**, reducing reliance on manual data collection and enhancing data consistency.
- **Facilitating Policy-Making**: Accurate and timely data from new initiatives like **Digital Crop Surveys** help policymakers make **informed decisions** about resource allocation and support measures like **Public Distribution System**, **food security** etc.
- **Addressing Climate Impacts**: **Climate change** affects crop production, and traditional methods may struggle to keep up with the changing conditions.
    - Advanced technologies like satellite imagery can quickly offer better data for adjusting farming practices e.g., **advance warning** in case of **locust attack**.
- **Handling Large-Scale Data**: In India, estimating crop production across vast and **diverse agricultural regions** can be easier using digital technologies.

Agriculture Census and Livestock Census

- **Agriculture Census:** The **Ministry of Agriculture & Farmers Welfare** conducts **agriculture census** to gather crucial data on the agricultural sector.
    - The census follows the decennial **World Census of Agriculture (WCA)** guidelines set by the **Food and Agriculture Organization (FAO)** of the **United Nations.**
    - Data is classified by different size classes **(marginal, small, semi-medium, medium, and large)** and social groups, including **Scheduled Castes** and **Scheduled Tribes**.
    - The Agriculture Census is carried out once in **five years**.
        - So far, **ten Agriculture Censuses** have been conducted in the country since **1970-71** and the current Agriculture Census with the reference year **2021-22** is the **eleventh** in the series.
- **Livestock Census: The Ministry of Fisheries, Animal Husbandry & Dairying** conducts **livestock census** once every **5 years**.
    - The Livestock Census covers **all domesticated animals**.
    - It has been conducted periodically since **1919-20**. So far **20** such censuses have been conducted with the **20th** one conducted in **2019.**

What are the Challenges Involved in the Adoption of New Tech Initiatives for

Farm Data Collection?

- **Lack of Digital Infrastructure: Inadequate** infrastructure like **the cloud for data storage and data processing skills** of public officials hampers the use of digital technology in agriculture.
- **Limited Access to Technology:** Smallholder farmers **often lack access to technology** and the necessary **digital skills** which hinders adoption of digital tools and limits data generation.
- **Data Accuracy and Reliability:** Concerns remain about the **accuracy and reliability** of data collected through new technologies.
    - **Inaccurate data collection tools may lead to poor decision-making** and decreased trust in digital systems.
- **Integration with Existing Systems:** New data collection tools may not seamlessly integrate with traditional systems, causing **data management issues**. It may complicate the adoption process and can lead to inefficiencies.
    - In traditional systems, crop data are in **regional language and local script**. Converting them into **multiple languages** for universal access and uploading them correctly on **cloud storage** is a tiring process.

Way Forward

- **Improve Technical Skills:** Partner with agricultural extension services e.g., **Krishi Vigyan Kendras (KVKs)**, **NGOs**, and tech companies to deliver training. Offer workshops, online courses, and **hands-on demonstrations**.
- **Facilitate Integration with Existing Systems:** Ensure new technologies are compatible with existing **farm management systems** for a seamless experience for users.
- **Regular Audits and Validation**: Conduct periodic audits and cross-checks of the collected data to identify discrepancies and ensure its reliability.

Drishti Mains Question:

Q. What is the need for real-time crop data estimation in an economy? Discuss the challenges persisting in the adoption of digital technologies for crop estimation.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q. In the context of India, which of the following is/are considered to be practice(s) of eco-friendly agriculture? (2020)

1. Crop diversification
2. Legume intensification
3. Tensiometer use
4. Vertical farming

Select the correct answer using the code given below:

(a) 1, 2 and 3 only

(b) 3 only

(c) 4 only

(d) 1, 2, 3 and 4

Ans: (a)

Q. An objective of the National Food Security Mission is to increase the production of certain crops through area expansion and productivity enhancement in a sustainable manner in the identified districts of the country. What are those crops? (2010)

(a) Rice and wheat only

(b) Rice, wheat and pulses only

(c) Rice, wheat, pulses and oil seeds only

(d) Rice, wheat, pulses, oil seeds and vegetables

Ans: (b)

Mains

Q. What are the present challenges before crop diversification? How do emerging technologies provide an opportunity for crop diversification? **(2021)**

Q. Why did the Green Revolution in India virtually by-passthe eastern region despite fertile soil and good availability of water? **(2014)**