



# **AGRICULTURAL STATISTICS SYSTEM IN INDIA – SOME ISSUES**

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# Outline

- Agriculture in India- An overview
- Significance of Agricultural Statistics
- Release of national level estimates
- Validation of Data
- Collection of primary data by States
- Other sources of data on area, production and yield
- Problems in the Data on Agricultural Crops
- Expert Committee on Agricultural Statistics
- Way forward

# Agricultural Development in India-Some Important Features

- Five-fold increase in food grains production since 1950-51
- Moved away from food dependency to a net food exporter
- Largest producer of milk, annual output of 155.5 MT in 2015-16
- India is world's largest producer of pulses
- Second largest producer of sugarcane, rice and wheat
- Ranks second in fish production and aquaculture, next only to China
- Agriculture offers livelihood to 55% of the country's workforce

# Agricultural Development: Challenges

- Share of Agriculture and allied sector in overall GDP – 15.0% (2011-12 prices)
- Average growth in GDP Agriculture & Allied Sector 1.65% in the first four years of the 12<sup>th</sup> Plan-target 4%
- Land holding size is shrinking, reducing viability of small farms
- Significant part of farms (53%) remain rainfed.
- A large proportion of rural households continue to depend on agriculture for livelihood – performance in agriculture is crucial determinant in terms of food security
- Doubling farmers income by 2022

# Significance of Agricultural Statistics

- Agriculture occupies a multiplier effect on the entire Indian economy
- It necessitates existence of a robust Agricultural Statistics System
- Availability of reliable and timely crop estimates needed for important policy decisions on;  
pricing, procurement, storage, transportation, marketing, export/import, public distribution, investment planning and compilation of GDP.
- Agricultural Statistics System plays a key role in improving farmers welfare and enhancing food security in the country.

# Release of Production Estimates- All India

- The Directorate of Economics & Statistics in the Union Ministry of Agriculture and Farmers Welfare brings out four advance estimates and one final estimate at the national level:
- **Advance Estimates (27 major crops)**
  - First : September
  - Second : February
  - Third : April
  - Fourth : July
- **Final Estimates (27 major+3 minor crops)**
  - Six months after the end of agriculture year

## Estimates Generated for

- 27 major crops:

*rice, wheat, jowar, bajra, maize, ragi, barley, small millets, tur (arhar), gram, urad, moong, other kharif pulses, other rabi pulses, groundnut, rapeseed & mustard, soyabean, nigerseed, castorseed, sunflower, safflower, linseed, sesamum, sugarcane, cotton, jute and mesta.*

- 3 minor crops:

*guarseed, sanhemp and tobacco.*

# Validation of Data

DES validates state level crop-wise data of SASAs with inputs from:

- ❖ Forecasts given by the Space Applications Center (SAC), Ahmedabad and IEG, New Delhi
- ❖ Inputs received from the weekly Crop Weather Watch Group (CWWG) meetings
- ❖ Results of the available Crop Cutting Experiments received from the SASAs/ NSSO for selected crops
- ❖ Trends in the area, production and yield of different crops during the last 5 years and
- ❖ Trends in procurement and prices of respective commodities



# Collection of Primary Data

- State Governments have designated one of its Departments as State Agricultural Statistics Authorities (SASAs) which are responsible for providing agricultural estimates at prescribed intervals to DES for finalizing Advance/Final Estimates.
- SASAs vary from State to State and are in one of the following State Departments:
  - ❖ **Department of Agriculture** (Gujarat, Haryana, Jharkhand, MP, Maharashtra Punjab, UP, Uttarakhand and WB)
  - ❖ **Directorate of Economics & Statistics** (AP, Assam, Bihar, J&K, Karnataka, Kerala, Orissa, Rajasthan and Tamil Nadu)
- **Department of Land Records** (Chhattisgarh and HP)

# CROP STATISTICS

- Crop Statistics has 2 components-
  - ✓ Area sown
  - ✓ Average yield

# AREA STATISTICS

States/UTs classified into 3 broad groups-

- **Land record** or Temporarily Settled States- area statistics collected by complete enumeration (86% area)
- **Non-Land record** or Permanently Settled States- area statistics collected through sample surveys (9% area)
- Satisfactory system of collection of area statistics **yet to be developed** (5% area).

# YIELD ESTIMATION

- ❖ Yield estimation – Crop Cutting Experiments under General Crop Estimation Surveys (GCES) conducted in different States/UTs.
- ❖ Total 71 crops - 55 food crops and 16 non-food crops covered under General Crop Estimation Survey (GCES)

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# YIELD ESTIMATION

Yield

- ❖ Sampling Design-Stratified Multistage Sampling.
- ❖ District level no. of CCEs.(Major/Minor districts)
- ❖ Experimental Plot Shape and size.
- ❖ 3-tier Supervision of CCEs
- ❖ Crop Insurance Scheme-Increasing number of CCEs.

## Other Sources of data

**Crop Weather Watch Group (CWWG) meeting**  
provides weekly inputs on:-

- Weather / rainfall situation
- Progressive sowing position
- Water storage in major reservoirs
- Availability of seeds, fertilizers
- Pest and disease situation
- Market arrivals and price situation
- Procurement
- Import / Export position

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## Other Sources of data

### Forecasting Agricultural output using Space, Agro-Meteorology and Land based observation (FASAL)

- To enhance the capabilities of the existing system of crop forecasts using information available on weather, economic variables and land based observations, the FASAL scheme was launched in August, 2006.
- Under FASAL, multiple forecast of 11 major crops:  
(i) Rice (Kharif & Rabi), (ii) Jowar (Kharif & Rabi), (iii) Maize, (iv) Bajra, (v) Jute, (vi) Ragi, (vii) Cotton, (viii) Groundnut (Kharif & Rabi), (ix) Sugarcane, (x) Rapeseed & Mustard and (xi) Wheat are envisaged at National/State/District level depending on the status of technology available.

# FASAL - Partner Organizations

- Mahalanobis National Crop Forecast Centre (MNCFC)- remote sensing technology based forecast of area & production for:
  - (i) Rice (Kharif & Rabi), (ii) Jowar (Kharif & Rabi), (iii) Jute, (iv) Cotton, (v) Groundnut (Kharif & Rabi), (vi) Sugarcane, (vii) Rapeseed & Mustard and (viii) Wheatat district/State/All India level.
- Forecast Schedule – F1 Kharif (15<sup>th</sup> Sept.) Rabi (31<sup>st</sup> Jan.)  
F2 Kharif (15<sup>th</sup> Oct.) Rabi (28<sup>th</sup> Feb.)  
F3 Kharif (30<sup>th</sup> Nov.) Rabi (31<sup>st</sup> Mar.)
- Institute of Economic Growth (IEG)-Forecast of area, production and yield in Kharif & Rabi season at pre sowing (Fo) & sowing (F1) stage based on Econometric models.
- Models use trends in crop area and yield in the season, wholesale prices, MSPs, Prices of major fertilizers and pesticides, Quantity of fertilizers and pesticides used and Rainfall etc.

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# FASAL-Partner Organizations (MNCFC, IEG and IMD)

- Forecast provided by IEG for 10 crops:-

(i) Rice (Kharif & Rabi) (ii) Bajra, (iii) Cotton (iv) Jowar (Kharif & Rabi) (v) Groundnut (Kharif & Rabi), (vi) Jute (vii) Maize (viii) Rapeseed & Mustard and (ix) Sugarcane (x) Wheat.

- at all India and State level

- Forecast Time – Fo Kharif (31st May) Rabi (30th Nov.)

- F1 Kharif (31st July) Rabi (31st Jan.)

- IMD provides yield forecasts based on Agromet models at District/State level for selected crops.

## Central Assistance for Improvement in Agricultural Statistics

- Agricultural Statistics-States responsibility.
- Assistance to States through Centrally Sponsored Scheme of Improvement of Agricultural Statistics (IAS) consisting of:
  - Timely Reporting Scheme (TRS)
  - Establishment of an Agency for Reporting of Agricultural Statistics (EARAS), and
  - Improvement of Crop Statistics (ICS)
- Since 2007-08, GOI is fully funding these schemes.

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## Central Assistance for Improvement in Agricultural Statistics

- **TRS-** Assistance to Land Record States for timely data on 20% villages through revenue set up.
- **EARAS-** Assistance to other States for collection of data from 20% sample villages through field investigators

## IMPROVEMENT IN CROP STATISTICS

- ❖ The ICS Scheme was introduced in 1973-74.
- ❖ The objective being improvement in the quality of statistics through joint efforts of Centre and State Authorities.
- ❖ The Scheme is in operation in 22 States including Delhi and Pondicherry.
- ❖ For checking errors of aggregation, supervisors also scrutinize the crops abstracts of the villages prepared by the Patwaris.
- ❖ Non-Land Record States are also covered under this Scheme with the same methodology as in case of land record States.

## Problems in the Data on Agricultural Crops Reported by States

- Delay in reporting by States
- Significant variations in successive advance and final estimates
- Inter-agency variation in the estimates within a State
- Year to year large variations in the estimates within a State
- Inter-State large variations in yield rates
- Yield based on inadequate no. of crop cutting experiments
- Non-sampling errors in conduct of CCEs on account of the National Crop Insurance Scheme.

# Expert Committee on Agricultural Statistics

Prof. Vaidyanathan Committee constituted in 2009 observed that:

- Present system of collection of agricultural statistics is based on statistically sound principles
- If Properly implemented, the system generate estimates at the State and centre levels within acceptable margin of statistical error
- The system is constrained due to implementation bottlenecks – mainly on account of inadequate quality of primary data on area and yield
- Patwaris are over-burdened due to large jurisdiction and multiple responsibilities

# Expert Committee's Recommendations

- Urgent need for radical restructuring of the system to provide reliable and timely estimates .
- Setting up of a National Crop Statistics Centre (NCSC) as an autonomous, professional organization in the Ministry of Agriculture & Farmers Welfare.
- NCSC to be headed by a qualified Statistician with expertise in conduct of sample surveys
- Dedicated staff and supervisors for field work for preparation of National and State level estimates
- Remote sensing needs to be expanded and reorganized to give estimates for more crops.

# Way Forward

- An exclusive field functionary on contract basis funded by State Agriculture Department for collection of primary data
- Field functionary has to work in close coordination with Patwari
- Local graduates/ post graduates can be equipped to handle the work after a short training
- One field functionary can handle area enumeration in sowing season and CCEs during harvesting season in 7-8 villages
- Staff already engaged under TRS can supervise primary work done by the contractual worker
- A State level Coordination Committee of D/o Agriculture, Land Records and DES should coordinate with other State Agencies to finalize State level estimates



# THANKS



May 2, 2017