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ROLE OF STATISTICS IN AGRICULTURE

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Introduction

In a country with an agrarian economy like India, Agriculture plays a pivotal role in the daily livelihood of a majority section of the population. It is estimated that over 58 % of the rural population of India is directly engaged in agriculture for earning their livelihood. Agriculture, along with fisheries and forestry, is one of the largest contributors to the Gross Domestic Product (GDP). As per the 2nd advised estimates by the Central Statistics Office (CSO), the share of agriculture and allied sectors (including agriculture, livestock, forestry and fishery) is expected to be 17.3 per cent of the Gross Value Added (GVA) during 2016-17 at 2011-12 prices. Thus in a country like India there is a huge need for development of Agriculture as times are changing the land under cultivation are decreasing and at the same time the population is increasing significantly it means that in the coming years we will have more hungry mouths to feed and hence development in Agriculture is the need of the hour. Statistics in its crude sense may be defined as the branch of mathematics that deals with the collection, analysis, interpretation, and presentation of masses of numerical data. However in real life statistics has much more to contribute than the definition.

Statistics in Agriculture

Data and numerical information has always been of huge importance in the growth and development of agriculture especially, in developed countries. In developing countries like India, although it has not been utilized adequately so far. The quantitative agricultural researches, in fact, are largely based on statistical data. Statistics plays a key role in planning, monitoring and evaluation of socio-economic policies and improving governance. Availability of good data during the implementation process ensures the effective control on delivery of various public services and thus results in good governance.

Stressing on the significance of statistics, the importance of statistics has been growing rapidly with the greater integration and inter-dependence of world economies, which is also evident from burgeoning data demands both at national and international levels. Local level statistics have immense significance for understanding the socio-economic reality and thereby appropriate policy formulation. The statistics on infrastructure, health, educational facilities and socio-economic conditions of society are essential to cater to the needs of planning and policy formulation at Sub-State levels. In such a scenario, interaction between the Central and State Governments in a federal set up like ours becomes very important. In the recent past, Ministries have taken a number of new initiatives to switch over from traditional ways of data collection and storage to digital and smart methods. Online data collection of Consumer Price Index, Index of Industrial Production is also being done in efficient manner. Taking importance of services sector in Indian economy into consideration, a focused survey on the segment is being incorporated in the 74th round of NSS during 2016-

17. The Statistics Department is giving proper direction in terms of agriculture statistics. Data and numerical information have played a very vital role in the growth and development of agriculture, especially in the developed countries. In an agrarian country, like India, having about 70.5 million operational holdings over an aggregate of 162 million hectares, the utility of agricultural statistics is even more important, though it has not been utilized adequately so far. The quantitative agricultural researches, in fact, are largely based on statistical data. The advent of modern data processing equipment's has enabled the agricultural land use planners to utilize new techniques and methodologies and the demands for still more data.

Agriculture is the result of the combined effect of a number of factors of a place like the social, cultural, physical features of the place and other factors like institutional, political and technological factors interacting with one another which deeply influences the growth and development of the agriculture at a particular place and hence small isolated approaches will do no good to solve the problems related to growth and development of agriculture. Hence a multidisciplinary large body of numerical data, facts and figures would be essential to solve such problems and to undertake any research in the development of agriculture. The facts and figures about agriculture, whether they relate to land use, irrigation, forestry, agricultural production, yield and prices of the agricultural commodities are called agricultural data. The quantitative information on various aspects of agriculture present at a micro or a macro region. The region may be a country as a whole or a state, or district, or block, or village, or farm, or the field itself. The agricultural data are helpful in estimating, planning and forecasting the agricultural operation of a given unit of area at a given point of time.

1. Vistas of Agricultural Statistics

Agricultural statistics has a very wide coverage and its scope is very widening. The detailed agricultural statistics is required at the national to the village and farm levels for agricultural policy decision, placing agricultural development and estimates of the agricultural and national income. In order to understand the nature of agricultural statistics more fully, they may be classified into the following major categories

- Land utilization and irrigation, including the net area sown, gross cultivated area, current fallow, cultivable waste, irrigated area in *Kharif* and *Rabi* seasons etc.
- Forestry.
- Agricultural production including arable, plantations, livestock and fisheries.
- Agricultural prices and wages.
- Statistics relating to agricultural organization and farming structure, e.g., persons employed in agriculture, their status, land held under various tenure, number of draught animals, implements, farm building, etc.
- Statistics and economics of production and marketing, e.g., cost of production, input-output ratio, marketing changes, marketing spread over, etc.
- General statistics, literacy among those employed in agriculture, health, sanitation.
- Statistics relating to weather and climate, rainfall and its dis-tribution, temperature and its range, soil and its pH value, etc.
- Forecast weather, crops and prices

The branch of economic statistics that deals with agriculture and, as such, is an important tool for state management and planned guidance of socialist agricultural enterprises. The principal tasks involved in agricultural statistics are the collection, processing, and analysis of statistical data that characterize the current status and development of agriculture and the fulfillment of production plans. Such data are used to draw up yearly and long-range plans for agricultural production. The sources of information employed in agricultural statistics are censuses, sample surveys, and the periodic and annual reports submitted by state and cooperative agricultural enterprises, reports based on the data obtained from basic bookkeeping procedures and production accounting at such farms.

A system of leading indexes is used in agricultural statistics. These indexes include land area and the extent of agricultural land, the composition and distribution of such land in terms of use, and the land area sown and in varietal plantings. Others are the gross harvest and yield of agricultural crops, the number and productivity of agricultural animals, the output of animal products, and gross, commercial, and net agricultural output. Statistics on the labour force include indexes of the number and employment of the labour force, labour remuneration, and labour productivity. Other indexes show the size and structure of the fixed capital stock, the capital-labour ratio, and the energy-labour ratio, prime cost of production, and the profitability of individual products and the economy as a whole. Productivity, the capital-labour ratio, the energy-labour ratio, the prime cost, and other indexes are studied only for agriculture in the public sector.

In the capitalist countries, national agricultural statistics are published in statistical collections, yearbooks, and special journals, all of which provide information on various topics, such as the extent of sown area, the production and yield of agricultural crops, the number of livestock and livestock productivity, the use of mineral fertilizers, the mechanization of agriculture, the prices of agricultural products, land prices, and the volume and structure of production costs. Bourgeois agricultural statistics do not generally classify farms in terms of socioeconomic characteristics; rather, the statistical categories they employ—for example, the land area of farms seek to conceal the true position of the small producer in capitalist agriculture. Agricultural statistics for all countries are given in the annual and monthly reference works published by the United Nations Food and Agriculture Organization.

2. Agricultural statistics in India

In India, Agricultural Statistics system is decentralized both horizontally and vertically. Primary statistics are collected by the provincial governments and consolidated for the country by the national Ministry of Agriculture.

Major data sources for agriculture statistics are-

(i). Agriculture Census	(ii). Livestock Census
(iii). Marine Fisheries Census	(iv). Input Survey
(vi). Land Use Survey of National Remote Sensing Agency	(v). Land Use Survey
(vii). General Crop Estimation Survey	(viii). Integrated Sample Survey of Major Livestock Products

And all this is within Ministry of Agriculture. Further: Apart from the Ministry of Agriculture, there are several other Ministries at the national level which are engaged in generation of related statistics as part of their functioning.

- Fertilizers – Ministry of Chemicals & Fertilizers
- Agricultural Trade – Ministry of Commerce
- Rainfall – Ministry of Science & Technology
- Reservoirs – Ministry of Water Resources
- Agricultural Population – Ministry of Home Affairs (decadal), Ministry of Rural Development, Ministry of Statistics (periodical)
- Floods – Ministry of Home Affairs
- Agriculture GDP – Ministry of Statistics

While the facts above is not exhaustive, it gives an idea as to how widely spread is the domain of agricultural statistics in India. This is a major problem with Indian Statistics system in general. There are just too many sources and it is a monumental task to have any idea about government's policies in any sector. The media is replete with suggestions to press reforms in various sectors (with each expert suggesting his sector is top priority).

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