

Indian Agricultural Statistics: System and Reforms

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Abstract

The enormity of Indian agricultural sector is the major impediment in collecting and providing agricultural statistics of the country. The unorganised nature of the sector compounds this problem and as a result, agricultural statistics of the country has problems of timeliness as well as dissemination. Despite these constraints, Indian agricultural statistical system is acclaimed as one of the best in the world. The system has been reviewed in the past and recently the National Statistical Commission reviewed the process in detail. This paper takes a close look at the report of the Indian Statistical Commission and its recommendations from a user perspective. I also endeavour to suggest here a few measures for improving the timeliness and the process of dissemination of agricultural statistics.

Introduction

In the face of massive spread of agricultural sector in India, in terms of area as well as number of holdings, the challenge of collecting agriculture statistics is surely no less than a Herculean task. Collecting data covering 141 million hectares of cultivated area, for more than 50 crops, on more than 270 indicators, and spread over 80 million farmers is certainly a huge mission. Despite this enormous volume, over the last five decades, we have achieved significant accuracy in agricultural statistics that compares well with many other countries. The history of agriculture statistics in India dates back to Kautilya's Artha Shastra, wherein, the administrative system for revenue collection was well described. The Mogul system, followed a similar pattern and had put in place the village level officials to collect the revenue and thus provided, the basic infrastructure for collecting agriculture statistics. British administrators utilised the same system to administer land revenue with some modifications. They began on the lines of *Aine Akabari* and that gave a good start

for the British administrators. Thanks to the Mogul rulers of India, who have settled the revenue system of the country in a systematic manner, so that the collection of revenue statistics, along with the other agriculture statistics, was not difficult. The Famine Commission Report 1880 made first reference to the inadequacy of agriculture statistics in India this was also followed in the recommendations of Royal Commission on Agriculture in 1928. Following this, attempts were made to put agriculture statistics framework in a systematic manner, specifically taking advantage of the settlement surveys. However, the first scientific initiative was taken in 1949 with the Technical Committee on Coordination of Agriculture Statistics went into question of improvement of agriculture statistics. The system was well set, but there were large number of inadequacies and problems that needed corrections. These pose challenges in terms of volume and spread and therefore some problems on accuracy may have to be rounded off, when one uses the data provided under agricultural statistics.

National Statistics Commission attempted a full review of the agricultural statistics in the country and provided guidelines to improve that. The Commission in its report submitted in August 2001 suggested steps to improve the agriculture statistical system from the present one. Here we are making an attempt to review the recommendations made by the National Statistics Commission, and look into the task in providing cleaner agriculture statistics. I need not reemphasize that the task of collecting agriculture statistics in India is one of the difficult most both in the context of its enormity, as well as unorganized nature of the sector. Keeping these constraints in view I begin to assess the recommendations of NSC.

Major Components of the Data System

Agricultural Statistics system has a number of components that begin from the time tested Timely Reporting System (TRS) operated through *Patwari* and *Girdawari*, well laid statistical design for Crop Cutting Experiments, Agricultural Census, Livestock Census and Input Surveys. All these are usually managed by the Department of Agriculture or the Directorates of Statistics in the States, finally compiled by the office of the Economic and Statistical Advisor of the Ministry of Agriculture, Government of India. Major problem with the system is the time lag between the collection and publication (availability) of the data. At times this is so large that the data becomes almost non-usable. Some of the State governments

have overcome this difficulty and the process of computerisation has helped to modernise the system.

i. Timely Reporting System (TRS)

Timely Reporting System (TRS) has been in operation in the country for the last five decades. The Technical Committee on Coordination of Agricultural Statistics, 1949, recommended extension of geographical coverage, amplification of the scope, improvement in accuracy, initiation of new statistics, standardisation of published data and coordination of different agencies. The recommendations culminated into a training programme for the supervisory agencies. It helped in putting the system on the right track and *Patwari* (Village Accountant (VAs)) and *Girdawari* was given the responsibility to file the returns of area in a proforma supplied with the village forms. The *Patwari* was expected to file two crop inspection reports along with many other village level formats. In addition to these, The VAs are given many other village level responsibilities. As a result, the office of the Patwari has been over-burdened with multi-farious functions. Given the increase in the number of holdings, number of farmers and other duties assigned to the office of the Patwari, it cannot be expected of a person to pay significant attention to the filing of the TRS returns.

Under TRS the four forecasts are issued. The first forecast relating to the Kharif crops is based on the reports prepared by the states, and the second relating to the both Kharif and Rabi crops takes into account the additional information obtained from various sources, third forecast is based on the advance estimates which are obtained from the Department of Crop Weather Watch Group (CWWG), and the fourth is based on final figures. NSC recommended that the four forecasts should issued periodically, with the first in the middle of September, the second in January, Third in the end of March and Fourth in the end of May. The National Statistics Commission (NSC) took note of this fact and recommended the reduction of the jurisdiction of Patwari, however such reduction will require more number of staff with proper training. While we agree totally with the reduction of the jurisdiction of the Patwari it is essential to support the area statistics with Geographical Information System (GIS). The Commission recommended twenty per cent sample should be selected to estimate crop area with a sufficient degree of precision at the all India. The processing centre should receive the village crop statements around 78 per cent of the sample villages and around 45 per cent by the

due date. One of the major problem areas is the estimation of area under mixed crops and this is traditionally done on the basis of standard ratios. The area ratios of mixed crops should be re-estimated to allocate the areas of constituent crops of major crop mixtures should be fixed for the recognized mixtures at sub-district and district levels. NSC recommended an exploratory study on the desirability of adding to the current year's TRS (Timely Reporting Schemes) sample, a small sub-sample of the preceding year's TRS sample. This is an additional work. However, we feel that such sample surveys should be used in addition to the presently existing complete enumeration and GIS that would make the data more reliable. On the same lines the NSC has recommended that "cent per cent" coverage will be required in addition to Sample Surveys. NSC also recommended for Establishment of Agency for Reporting Agricultural Statistics (EARAS), while agreeing with the recommendations of the NSC we feel that the remote sensing methodology should be simultaneously used for crosschecking. The survey data should be utilized to correct the TRS system and in order to reduce delay in reporting of the area statistics. Most important aspect however is establishing a complete network of data system to enable the transfer of transfer of the data from taluka place to district and state headquarters. Quick availability of data may go a long way in planning for the policy interventions. The NSC recommended following:

- With the help of information technology the transmission and processing data could be accelerated.
- The *Patwaris* should submit the crop statements to the processing centre with the completion of *Girdawari*.
- The crop entries of the *Patwari* and the supervisor should tally with each other in about one third of the survey numbers is inspected.
- There should be clear indication on *Patwari's* major functions.
- *Patwari* should take sufficiently the advantage of familiarity with the local conditions in discharging his functions.
- Increase in the strength of *Patwaris* is necessary.
- There should be higher level of intensive supervision of *Patwari's* work.

ii. Land-use Statistics & Area under the Crops:

Area under the crops and the land use statistics are also reported under the Timely Reporting System. The land-use statistics is reported under nine-fold classification. This alone takes significant time of the Patwari to collect the data and file the format. Therefore, it is not surprising that the Land use statistics are available very late and even after the data on area under the crops are available. The National Statistics Commission recommended addition of a few more categories under this. Specifically, the NSC emphasised to enlarge the nine-fold classification of

land use by two or three more categories such as social forestry, marshy and water logged land and land under still waters, which are of common interest to the centre and states and it is also easy to identify by the patwari. But that would increase the work of the Village Accountants. More than that these data are available through Remote Sensing Maps very easily and have very little variations. It is better if Land Use data could be collected only for a few components out of the nine, so that the *Patwari* does not have to spend time on all the components. Among these, the 'Net/Gross Cropped Area' and 'Fallow Lands' are most important components for the policy purpose. The remaining components of land-use are important but do not have significant year to year changes and could be better ascertained with the help of remote sensing agencies once in three years. The estimates provided by the remote sensing agency would also be more accurate compared with the TRS (Patwari estimates) and therefore, it would be useful and time saving to reduce some work to the Patwari. We also feel that the reporting of the land-use statistics can be confined to a definite periodicity say, once in five years.

iii. Agriculture and Livestock Censuses

Agriculture and Livestock Censuses are undertaken in the country once in five years but the data are not collected in similar fashion and concurrently. These data are of greater importance because here we get volume of information in detail and by size of holding. National Statistics Commission has recommended integration of the agricultural and livestock censuses and to follow a 20-per cent sample of villages for collecting the data. Similarly, Eighth Conference of the Central and State Statistical Organisations held in 1988 had also recommended for the integration procedure of the two censuses. There was some opposition from the Census units of the State departments for such integration. The reasons provided by the State units of the Agriculture and Livestock censuses for not integrating the two sources of data could be taken care of in the new design. This would make the data available at the level of Panchayat to meet several needs. The urgency of agricultural statistics for small areas (C.D blocks, Panchayats) needs no emphasis. In addition to these, the Input Survey that is conducted concurrently with the Agricultural Census could also be combined with the two. That will save a lot of work on three different surveys handled by three sets of administrative staff and having different method of collecting the data. A simple and precise computer friendly information sheet will reduce the workload as well as the time taken for collecting these data without

sacrificing the depth of the data. The NSC recommended integration of both livestock and Agricultural census but favoured a 20 per cent sample with a limited pilot investigation. We agree with the suggestion of National Statistics Commission for having a survey of certain operation on the land however, we are not quite happy with the 20-per cent size provided by the NSC. The size of the sample should be much larger than 20-per cent because that will help in maintaining the reliability of the data. Alternatively, one can also consider of getting forms furnished by the land and livestock holders once in five years to the government similarly like the IT returns and that will probably help to have a census as well as checking of operation by the sample survey. This will require providing legal backing and at the same time assurance that these data will not be used for any other purpose other than statistical compilation.

iv. Crop Cutting Experiments: Production and Yields

The need and importance of estimation of crop yields, was felt as early as in 1919, when the Board of Agriculture recommended that crop cutting experiments be taken randomly on fields. Attempts to introduce crop-cutting experiments were made in 1925 through Hubback's surveys in Bihar and Orissa. Late Shri C D Deshmukh in Madhya Pradesh employed the same method during 1928-30 and latter repeated by P S Rao in the same state. After this, with a sizeable time gap, in 1939 Professor Mahalnobis conducted crop-cutting experiments in Bengal and similar experiments were taken in the following years in Uttar Pradesh and Bihar. In 1942-43, Panse and Kalamkar carried out crop cutting experiments in Akola district of Maharashtra. By that time the method was standardised by Indian Council of Agricultural Research under the guidance of Professor Sukhatme. The objectives of the experiment included evolving a scientific statistical technique, employing trained staff in order to conduct the crop cutting experiments and estimate yield per unit of area in each of the States with highest precision. The present sampling design is Stratified Multistage Random Sampling. The region is first divided into submission scored strata from each of the strata, a certain predefined number of experiments are selected randomly. Administratively taluk is taken as a unit for the sampling and Hobli serves as the final unit of conducting the experiments. There is an elaborate procedure to be followed all conducting the crop cutting experiments and a manual is given to each Department of Statistics to conduct the experiments. The yields of mixed crops are estimated with the help of ratios prevalent on the experimental field,

and these are applied for the entire state. NSC also suggested to review the list of crops, which is covered, by the Village Crop Abstract (*Jinswar*) and it may also bring some changes in the manual of instructions for the *Girdawari*.

The demand on the data of property experiments has been increasing substantially in the context of the safety net programmes like crop insurance and agriculture subsidies. It became essential now popping league estimates at lower than the taluk level and up to Panchayat level. This became essential with the decentralised government system introduced after the amendment of the Constitution and introduction of article 243 G. These data are essential and useful in many respects and therefore it is essential to systematise the process of the data abolition and availability. Secrecy surrounds the process of collection of the crop cutting experiment data, and these are not made easily available for any analysis. It is essential that these data are in public domain after initial work on the data is completed. The National commission on statistics has recommended various methods in order to improve the system and that includes more the supervisory recommendations. We strongly feel that the data should be calibrated in the most usable form, and made available for the purposes other than those for which it has been used. As mentioned above, it is essential to keep the data in public domain in order to incorporate corrections as well as arrived at various policy indications stemming out of the analysis.

v. Prices, Wages, Market and Other Infrastructure

The data on agricultural wages has been one of the weakest links in the statistical system. It has been pointed out in a few studies that the data are collected from a few samples and do not follow any statistical design. (Rao 1972, Kajale-Ghanekar, 1997). Unfortunately, the process of collection of the wages data itself does not allow any in-depth analysis of agricultural wages. This sector needs better attention in terms of methodological reforms. The price data also have their own shortcomings especially the Farm Harvest Prices. Therefore, it is necessary that academics and policy planners pay more attention to the reform in these two sectors. The wholesale prices and market arrivals as well as the Market price data are well managed but not easily accessible in all the states, Karnataka is an exception.

Reforms Intended and Feasible

Indian Agricultural Statistical System has undergone a few critical reviews and the process has been revised during the last six decades (GoI, 1949 and 1959). Number of suggestions were made in the past and the present System has evolved out of a good academic discussion. The Technical Committee on Coordination of agricultural Statistics 1949 recommended the following broad measures.

- Extension of Geographical Coverage
- Amplification of the Scope of the Existing Data
- Improvement in accuracy of the existing data
- Initiation of New Statistics
- Standardisation of the published Data

The National Commission on Statistics covered most of the areas of Agricultural Statistics for suggesting reforms in methods of collection and reporting. The recommendations of the National Commission on Statistics fall in five broad groups. First, the NCS suggested reducing the drudgery in collection of TRS data by taking a 20 percent of the sample. That helps in the time required for collecting the data, but it is silent about the method through which such sample will be selected and whether the sample region will remain same over years. In that case one needs to document the implications of such method and comparability of the data. What will be done with the manpower (*Patwari or VAs*) engaged for the purpose, and will that be redundant. Second, the NSC recommended necessity to reduce the jurisdiction of the village accountants. Their hereditary system of appointing the village accountants has been replaced, and the village accountants are appointed from among the applicants for the position. It is necessary to keep the transfers of the village accountants to a least number of times. The NCA recommended to declare the Girdawari as a programme on higher priority, and the Patwari be mandated to carry out the crop inspection according to prescribe time schedule, if necessary, by sparing him from other duties during that period. Second, the NCA recommended co-ordination of the data collected by different agencies, but it is silent on the administrative spread of these departments (agencies) and difficulties in getting effective coordination. Third, the NSC emphasised on quick transmission and processing of the data, in order to make it available to the users. For this it is essential to simplify the age-old formats of data collection and reduce the unwanted data. Fourth, the NSC has recommended use of Remote Sensing Data wherever

possible as well as computerization of the Land Records. We go a little further to suggest the computerization of the village records. That will give data links with the taluka, district and State level. NSC has not been very emphatic about the other allied data in the agricultural sector and these include infrastructure, fertilizer use, tractors, wages and prices. It suggested it is important to maintain a complete database on State-wise production and sale of tractors, power tillers, harvesters and other agricultural implements, density of such implements per hectare, investment made, level of mechanization, adoption of water saving devices, etc. Lastly, NSC has repeated the recommendation of the earlier review processes, which emphasised proper supervision. It stated that there should be systematic and periodic supervision of the collected data by the supervisors and training should be imparted by EARAS (Establishment of an Agency for Reporting Agricultural Statistics) to the functionaries. The provision of statistical study is necessary to examine whether the data collected in the ICS can be used for working out correction or adjustment factor is to be applied by official statistics of crop area. The very fact that NSC chose to suggest strict supervision points out their concern about quality consciousness. We suggest that if cultivators are asked to file Farm Returns with the basic data, the process will become easier. But they have to be assured the only statistical use of these data and not misuse of it for any other purpose.

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