

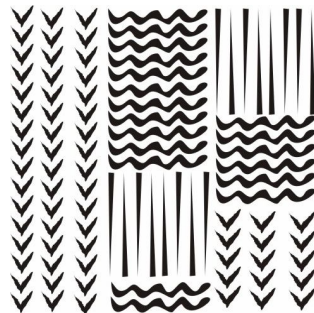
DRAFT PAPER

**A NOTE ON LAND USE AND CROP AREA STATISTICS
IN WEST BENGAL**

Aparajita Bakshi Indian Statistical Institute
V. K. Ramachandran Indian Statistical Institute

**STUDYING VILLAGE ECONOMIES IN INDIA
A COLLOQUIUM ON METHODOLOGY**

December 21 to 24, 2008



A NOTE ON LAND USE AND CROP AREA STATISTICS IN WEST BENGAL

Aparajita Bakshi *Indian Statistical Institute*

V. K. Ramachandran *Indian Statistical Institute*

INTRODUCTION

In terms of village level land records, the country can be divided into three types of regions (GOI 1999):

- a) States that are cadastrally surveyed and where a primary reporting agency exists for collection and annual revision of village level land records. These are mainly the erstwhile temporarily settled or ryotwari States where detailed land use, tenure and agricultural records were an integral part of the revenue system. This system is followed in 18 States, namely, Andhra Pradesh, Assam (excluding hill districts), Bihar, Chattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu, Uttaranchal and Uttar Pradesh, and the five Union Territories of Chandigarh, Dadra and Nagar Haveli, Daman and Diu, Delhi and Pondicherry.
- b) States that are cadastrally surveyed but where no primary reporting agency exists for collection and annual revision of land records. These are the erstwhile permanently settled States. These States are Kerala, Orissa and West Bengal.
- c) The third set of States comprise those that are neither cadastrally surveyed nor possess any land record. The States in this category are: parts of Assam (hill districts), Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura, and the two Union Territories of Andaman and Nicobar Islands and Lakshadweep

This paper attempts to analyse differences in the village-level records on land use and cropping pattern in erstwhile zamindari and ryotwari areas. With the abolition of statutory landlordism, there is a common land system in India, in which individuals have the right to own land directly, and none has the right to impose taxes, fees and imposts. However, there are significant and wide differences in India with respect to village level records in zamindari and ryotwari regions with its roots in the differences in the settlement history. In this paper, we shall not go into

village-based records in ryotwari areas, but as an illustration we shall refer to Tamil Nadu (an erstwhile ryotwari State) and West Bengal (an erstwhile zamindari State).

The essential difference in village level land records in these two States are as follows. In Tamil Nadu, data from cadastral survey, ownership and tenure, land use classification, irrigation source and status, season-wise cropping pattern and other details are recorded together in the same row as the cadastral number and the data are updated annually. In West Bengal, cadastral numbers are recorded along with the data on ownership and tenure. Alongside this there is a column for the use of land. These are updated as and when the land holder chooses to change the status. In Tamil Nadu, by contrast, the data are updated by the State in consultation with the owner at the time of *jamabandi*.¹ This should not be construed to mean that the Tamil Nadu records provide a completely accurate record of tenurial and other other parameters. Indeed, the data on tenancy can be very unreliable (see Ramachandran 1980, 1990). The point here is only that, in Tamil Nadu, plot-by-plot tenurial, land use and cropping pattern as well as irrigation data are collected together and presented as part of an integrated record (on this and related issues, see Yanagisawa 2008).

The database on land use in West Bengal as per the nine-fold classification specified by the Government of India and used by all the States are not from the village records but from sample surveys. Similarly, data on irrigation, irrigation source, cropping pattern are collected through sample surveys by different agencies and not aggregated from village records. Table 1 describes the various government departments and agencies responsible for collecting different items of agricultural statistics in West Bengal.

¹ Jamabandi is the seasonal updating of the records. This is done by village level staff. It is also known as girdawari.

Table 1 *Agencies responsible for collection and publication of agricultural statistics in West Bengal*

Type of data	Agencies responsible for collecting data	Agencies responsible for estimation and publication of data
Crop area	Department of Land and Land Reforms	Directorate of Agriculture
Land use	Department of Land and Land Reforms	Directorate of Agriculture
Crop yields	BAES, Directorate of Agriculture	BAES, Department of Agriculture (potato and minor crops)
Ownership of land holdings	Block Land and Land Reforms Office	Not published
Tenancy	Block Land and Land Reforms Office	Not published

Note. Data on sources and area under irrigation are available from multiple sources. See Rawal (2001) for a description of irrigation statistics in West Bengal

The difference in the two systems of agricultural statistics in ryotwari and zamindari areas is that in ryotwari areas all data are collected by a single agency though used by multiple users. In contrast, in zamindari areas each item of data is collected by different departments.

SYSTEM OF LAND USE AND CROP AREA STATISTICS IN WEST BENGAL

The first effort to evolve a uniform system of agricultural statistics in all States in India was taken up after Independence.² The problems confronting the temporarily settled States, which had village level agencies for reporting agricultural statistics, focused on standardization of concepts and definitions and improvement of the quality of data, the issues confronting the permanently settled States were more basic in nature. The task was to establish an agency to collect reliable agricultural statistics at the level of the basic administrative unit.

In West Bengal, the Bureau of Applied Economics and Statistics (BAES) had been carrying out crop surveys in different districts of the State for estimating the area and yield rate of seventeen major crops since 1951-52. Since 1968-69, the BAES was also made responsible for estimation land utilization under the nine-fold classification (GoWB 1979). The Department of Agriculture (DoA) also made some subjective estimates based on the knowledge of village chowkidars, but it was the estimates of the Bureau that were established as official estimates (Boyce, 1984). This system prevailed till the 1980s.

² The Technical Committee on Coordination of Agricultural Statistics in India (TCCAS) was formed in 1949 under the chairmanship of W.R. Natu for this purpose (GOI 1968).

To introduce a system of collection of agricultural statistics on complete field-to-field enumeration basis in the States that are cadastrally surveyed but did not have a village level revenue agency (viz. Kerala, Orissa and West Bengal), a centrally sponsored scheme 'Establishment of an Agency for Reporting Agricultural Statistics' (EARAS) was introduced in 1975-76 on recommendation from the National Commission on Agriculture (1976). The National Commission on Agriculture held the view that sample surveys cannot replace complete enumeration for providing various agricultural statistics. They provided two reasons for this. First, sample surveys cannot give estimates at lower geographical levels and secondly, sample surveys cannot give reliable estimates for minor crops. Hence in States like West Bengal, Orissa and Kerala, they recommended complete enumeration to be introduced in a phased manner so that every year more and more geographical area are covered by this reporting system (Report of the National Commission on Agriculture 1976, para 61.2.6).

In West Bengal, the EARAS scheme was introduced in 1980-81 and the estimates generated by this scheme are being treated as 'official statistics' since 1986-87. Even though the method of collecting agricultural statistics under EARAS in all official documents is reported as sample surveys, the term can be misleading.³ The process is actually a census of a sample of villages. A sample of villages is selected randomly for the survey and data is collected in these villages through complete field-to-field enumeration. The scheme visualised that each year a sample of 20 percent of villages from each block would be selected so that the entire state could be covered in a span of five years. The ultimate aim of this scheme was to build the infrastructure for land use and crop surveys through complete enumeration in the Permanently Settled States by the end of five years. Data collected in EARAS could generate Block level estimates of land use and crop area. Once the entire state has been covered and the basic records created, the records could be updated every season through crop surveys in all villages, just like the Temporary Settled tracts, and village level estimates could be obtained. In West Bengal, the scheme could only be extended to 15 percent villages each year instead of 20 percent.

Contrary to the previous period when the whole responsibility of sample survey for land use and acreage estimation, crop-cutting experiments for yield estimation as well as computation and

³ See GOI (1999), '*Guide to Official Statistics 1999*', for instance.

publication of results rested on the BAES, the new system introduced under is a multi-agency system.⁴ The responsibility is divided between three departments:

- i) The Department of Land and Land Reforms
- ii) The Directorate of Agriculture
- iii) Bureau of Applied Economics and Statistics

Collection of data regarding land use and area under crops in different seasons is the responsibility of the field staff of the Department of Land and Land Reforms. The estimation of area is prepared by the Directorate of Agriculture. The BAES as well as field staff of the Directorate carry out the crop cutting experiments for yield estimation. The estimates of yield and production of all crops except potato are prepared by the BAES. The Department of Agriculture prepares estimates for potato and some minor crops. The Evaluation Branch of the Department of Agriculture is the nodal agency for overall implementation of the scheme in the State.

The estimates of crop area and land use are made at the Block level. To arrive at such estimates, a sample of 15 percent of mouzas is selected at random from each block for survey. The sampling frame for selection of mouzas is prepared from the latest available records of the Land and Land Reform Department. Only those mouzas are selected in the sampling frame, which have over 50 percent area under agricultural uses.

Once the list of mouzas is prepared, 15 percent of mouzas (or the next even number or a minimum of eight mouzas) are selected in each block through systematic sampling method. The selected mouzas are classified into two sub-samples of equal size. The classification into sub-samples helps to minimize errors in the estimates. The final estimates are the simple average of the sub-samples. A complete list of each plot is prepared for the selected mouzas and complete enumeration of plots are carried out by 'Amins' of Land and Land Reforms Department to record the crops grown and land use in each plot. The crop survey is carried out for the four agricultural seasons of the year. The time schedule for crop survey is so fixed that it coincides with the time when the sowing of the crop of the season is over and harvesting has not started. The crop in each plot is recorded by direct observation by field staff. The details of land under non-agricultural uses is collected in the *rabi* season and verified in the summer season.

⁴ Details of the EARAS scheme and the methodology are obtained from GoWB (1995)

The data collected in the crop survey is recorded in specific forms and sent to the Directorate of Agriculture. The directorate of Agriculture prepares Block level estimates of area under crops and land use statistics.

The district level estimates of crop area and land use statistics are published in the Statistical Abstract, Statistical Handbooks and District Statistical Handbooks.⁵ Block level data on land use are published in The District Statistical Handbooks since 1994.

SOME COMMENTS ON LAND USE AND CROP AREA STATISTICS IN WEST BENGAL

It is not possible to obtain plot-wise data on land use and cropping pattern in West Bengal from any source. The Department of Land and Land Reforms keep plot-wise records on land ownership and tenancy and some information on land use but the records are not updated periodically. Changes in these records are made only when the owners apply to register a transfer of ownership or land use.⁶ These records may not reflect the exact pattern of land use at a certain point in time. The land use classification used in the land records is not the same as the standard classification used in the country. No information on cropping pattern is recorded in the land records.

The only source of village level aggregates on land use in West Bengal is the Census of India. The Census of India publishes village level data on land use and area irrigated by source of irrigation. The Census does not collect these data independently but obtains the data from other sources, particularly from “officials of the concerned Block Development Offices under the supervision of the Block Development Officer” in West Bengal (The District Census Handbooks, West Bengal 1991). The Census data on land use would thus be subject to the same inaccuracies as the land record in the State. The fact that Census data is available decennially and there is a substantial time lag in publishing the data limits the scope of using Census data on land use.

⁵ Statistical Handbook and District Statistical Handbook are annual publications while Statistical Abstracts are not always published annually. All the publications are published by the Bureau of Applied Economics and Statistics, GOWB.

⁶ Land owners are required to obtain a ‘no objection certificate’ from the Department to put agricultural land to non-agricultural use.

Block level estimates of land use and crop area are published in the District Statistical Handbooks since 1994. These estimates are based on sample surveys. The land-use data at the Block level available between 1994 and 2005 do not follow the standard nine fold classification. Since 2006, Block level data is available by the nine fold standard classification.

The EARAS was implemented with the vision of progressively establishing a village level agricultural data reporting system in the entire State similar to the ryotwari States that will eventually replace the sample based estimates of land use and crop area with estimates based on complete enumeration of plots. Even after almost two decades of the implementation of EARAS, this has not been achieved.

The National Statistical Commission 2001 recommended that the estimation of crop area in all States in India can be done on the basis of a sample survey to improve the quality and timeliness of data. The Commission states that:

the Commission is of the view that data from a 20 per cent sample is large enough to estimate crop area with a sufficient degree of precision at the all-India, State and district levels. The Commission has, therefore, recommended that crop area forecasts and final area estimates issued by the Ministry of Agriculture should be based on the results of the TRS (Total Reporting Scheme) in the temporarily settled States and on those of EARAS in the permanently settled States. The revised system for the estimation of crop areas will also reduce the workload of the primary data collecting agencies and improve the quality of their work (National Statistical Commission 2000, para 2.3.3).

Though emphasizing the use of a 20 per cent sample for estimation purposes, the Commission does not suggest dismantling the complete enumeration system altogether. It recommends that "...the *girdawari* is declared as a programme of high priority and the *patwari* is mandated to carry out the crop inspection, according to the prescribed time schedule, more importantly in the case of the 20 per cent villages..." (National Statistical Commission, para 2.3.3).

The usefulness and importance of a village level reporting agency for agricultural statistics and an integrated system of land records and agricultural statistics cannot be judged on the basis of its efficacy in generating district level estimates alone. With more emphasis on local level planning in India and especially in West Bengal with an exemplary Panchayat system, the importance of sub-district level data cannot be underestimated. In the absence of an integrated system in West Bengal, up-to-date village level data on land ownership and tenancy, irrigation, cropping pattern

and land use are not available. This is a significant data gap for purposes of village-level planning and implementation of development programmes.

References

Boyce, J (1987), *Agrarian Impasse in West Bengal: Institutional Constraints to Technological Change*, Oxford University Press.

GOI (1976), Report of the National Commission on Agriculture, Part XIV: Planning, Statistics and Administration, Ministry of Agriculture and Irrigation.

GOI (1968), *Land Records and Agricultural Statistics*, Ministry of Food, Agriculture and Cooperation.

GOI (1997), *Indian Agricultural Statistics*, Volumes I and II, Directorate of Economics and Statistics, Dept of Agriculture and Cooperation, Ministry of Agriculture.

GOI (1999), *Guide to Official Statistics 1999*, CSO, Department of Statistics, Ministry of Planning and Programme Implementation.

GOI (2000), *Report of the National Statistical Commission*, Ministry of Statistics and Programme Implementation available at <http://mospi.nic.in/nscr/mp.htm>

GOWB (1979), *Statistical System in West Bengal*, BAES.

GOWB (1995), Land Use and Crop Survey Programme in West Bengal, Evaluation wing, Directorate of Agriculture.

Ramachandran, V. K (1980), *A Note on the Sources of Official Data on Land Holdings in Tamil Nadu*, Data Series No. 1, Madras Institute of Development Studies.

Ramachandran, V. K (1990), *Wage Labour and Unfreedom in Agriculture: An Indian Case Study*, Clarendon Press, Oxford.

Rawal, V (2001), Irrigation Statistics in West Bengal, *Economic and Political Weekly*, July 7.

Yanagisawa, Haruka (2008), "Some Key Aspects in Understanding Historical Changes in South Indian Village Societies: Landholding and Non-farm Job Opportunities," paper presented at "Studying Village Economies in India: A Colloquium on Methodology".

APPENDIX

A note on land use classification in India

Till 1950, India followed a five-fold classification of land. The categories were as follows:

1. Area under forests
2. Area not available for cultivation
3. Uncultivated land excluding current fallows
4. Area under current fallows
5. Net Sown Area

In April 1949, the Government of India appointed a Committee on the Coordination of Agricultural Statistics in India to work out the details of the annual and periodical enquiries to be organised in connection with the World Agricultural Census. Among other things, the committee reviewed the existing classification of land use and recommended the need for revising it. The committee recommended a nine-fold classification, which could be aggregated into the erstwhile five-fold classification. The current categories are as follows:

1. Forests
2. Land under non-agricultural uses
3. Barren and unculturable land
4. Permanent pastures and other grazing land
5. Land under miscellaneous tree crops and groves not included in the net sown area
6. Culturable waste
7. Current Fallows
8. Net sown area

Area not available for cultivation in the old classification is the sum of classes 2 and 3 in the new classification. Categories 4 to 6 constitute uncultivated land excluding current fallows in the old classification (CSO, 1999).

The definition of each category is as follows.⁷

- i) Forest – Area under forest includes all lands classed as forest under any legal enactment dealing with forests or administered as forests, whether state owned or private, and whether wooded or maintained as potential forest land. The area where crops are raised in the forest and where grazing land and areas open for grazing within the forest should remain included under the forest area.
- ii) Land under non-agricultural use – All land occupied by buildings, roads and railways or under water, e.g. rivers and canals and other lands put to uses other than agriculture.
- iii) Barren and unculturable wasteland – this covers all barren and unculturable wasteland like mountains, deserts, etc. Land which cannot be brought under cultivation unless at an exorbitant cost shall be classed as unculturable waste whether such land is in isolated blocks or within cultivated holdings.

⁷Directorate of Economics and Statistics, Dept of Agriculture and Cooperation, Ministry of Agriculture, GOI (1997), Indian Agricultural Statistics, Volumes I and II

- iv) Permanent pastures and other grazing land – These cover all grazing lands whether they are permanent pastures and meadows or not. Village common grazing lands are included under this head.
- v) Miscellaneous tree crops etc. – under this class is included all cultivable land which is not included under net area sown but is put to some agricultural use. Lands under casurina trees, thatching grass, bamboo bushes and other groves for fuel, etc., which are not included under 'orchards', are classed under this category.
- vi) Culturable waste land – these include all land available for cultivation whether not taken up for cultivation or taken up for cultivation once, but not cultivated during the current year and last five years or more in succession for one reason or other. Such lands may be either fallow or covered with shrubs and jungles which are not put to any use. They may be assessed or unassessed and may lie in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession are also included in this category at the end of five years.
- vii) Fallow lands other than current fallows – this refers to all lands which were taken for cultivation but are temporarily out of cultivation for a period of not less than one year but not more than five years.
- viii) Current fallow – This comprises of crop area which are kept fallow during the current year. For example, if any seeding area is not cropped against the same year, it may be treated as current fallow.
- ix) Net area sown – This represents the area sown with crops and orchards counting area sown more than once in the same year only once.

The National Statistical Commission (2000) has suggested that the existing land use classification be extended to include categories such as social forestry, marshy and water-logged land, and land under still waters, all of which can easily be identified by the village-level official through visual observation.