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THE INDIAN SOCIETY OF AGRICULTURAL ECONOMICS

AIMS AND OBJECTS

To promote the investigation, study and improvement of the economic and social conditions of agriculture and rural life through

(a) periodical conferences for the discussion of problems;

(b) the publication of papers, separately or collectively; or in a periodical which may be issued under the auspices of the Society;

(c) co-operation with other institutions having similar objects, such as the International Conference of Agricultural Economists and the Indian Economic Association, etc.

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AGRICULTURAL STATISTICS[1]

BY

N. S. R. SASTRY

For many persons in India whose conception of Agricultural Statistics is confined to the estimates of areas and yields of major crops, and the number of livestock etc., the wealth of statistical data collected during the quinquennial Census of Agriculture in the United States of America should be a great eye-opener. This is mainly due to the different objectives. In this country, the collection of these data is part of the administrative duties of the over-worked revenue officials, whose competence for this specialized work is doubtful. The compilation of the data is often done in a routine manner without any analytical object. It is very rarely that competent people are assigned the task of going through the questionnaires or forms and suggesting improvements either in the contents or in the manner of collecting information.

The methods followed in the United States of America are in refreshing contrast. "The enquiries on agriculture have undergone a continued process of evolution as a result of experience gained with previous censuses, shifts in the needs of the users of these statistics and rapid and extensive changes in the form of American Agriculture itself." The task of preparation of schedules is usually assigned to a special Census Advisory Committee of experts. The field work is carried on by area managers and a large band of enumerators, who numbered 102,117 in the 1940 Census of Agricultural Production, and who were all given an intensive course of instruction in all phases of census work and a general knowledge of agriculture. Even the tabulation and office procedure are well planned in advance so as to bring out the important features as early as possible in order of priority. Such Censuses of Agriculture have been conducted decennially from 1880 and quinquennially since the twenties of this century. The reader's attention is drawn to the extent of comparability of the data in the different censuses due to the changes in dates of censuses, improvement in the data collected by addition of questions etc. Though agriculture is recognized to be very important in India, so far no census of agriculture has been taken, and even the sample surveys recommended in the Bowley Robertson Report have not been carried out. Though the collection of such data was at one time considered to be a costly luxury, the great privations during the famine

1. A review of the 1941 U.S.A. Agricultural Census.

and war and the high cost paid in men and money for want of basic data have brought about a change in the attitude of administrators.

The general Report on Agriculture is based on the U.S.A. Census of Agriculture of 1940, and it is divided into 10 chapters.

Farms and Farm Property

Details of the number and acreage of farms and the value of specified classes of farm property including a classification of land according to use in 1939 are given in this chapter. Details of total land area, the total land in farms, and the total rural and farm population are also given. It is noticed that, though the rural population was increasing from census to census, it was at a progressively smaller rate than that of the total. Figures of farm population are available from 1920. There was a drop in the farm population during the twenties, but a pronounced increase was noticed in the census of 1935. This was explained by the economic depression, which curtailed opportunities for urban employment. But by 1940 the farm population recovered to the 1930 level. This shows that the proportion of farm population to the total must have decreased still further. The total number of farms also showed a similar tendency, increasing trend up to 1920, fall in the next decade, sharp rise in 1935 and again retrocession in 1940. The area of land under farms has been increasing from census to census except for that of 1925. The considerable gains in farm acreage during the depression of the thirties were due to the migration of people back to farms, and the largest increases in the Mountain States and grazing areas of the West were due to a re-classification of lands formerly used as open range or grazed under permit. This does not mean that more lands of those regions are being used for agricultural purposes. Similarly, not all the changes in the number of farms are due to settlement on new lands, but to a large extent due to the changes in the scale of operations. A very large share of the value of farm property is that of land and buildings; and next in order comes value of livestock, the value of implements and machinery being the least of the three. As is to be expected, there are regional differences in the distribution of these three factors. Till 1920, each census showed substantial improvement in the value of farm property; but by 1935 it had dropped to levels below 1910, and in 1940 the values in most cases were higher than those in 1931.

Size of Farms

This chapter presents statistics of number of farms, all land in farms, average size of farms, specified use of farm land, value of land and buildings, and value of farm implements and machinery, classified according to the total acreage in the individual farms. Although the number of farms was the smallest since 1900, the acreage was the highest on record and the average

size was the largest since 1860. While on the one hand there was an increase in the number of small sized farms of 10 to 19 acres in certain regions, in some others there was an increase in the number of large sized farms of 1000 acres and over. The former trend is manifest in regions having facilities for part-time farming operations particularly in industrial areas, and the latter is pronounced in the corn belt where drought, the depression and increase in mechanised farming have all worked towards a consolidation of farms into larger operating units, and in the mountain regions where public lands used for grazing livestock are now used under a lease. In using the figures of size of farms, it should be kept in mind that they reflect the enumeration procedures followed as well as changes caused by economic conditions.

Colour, Tenure and Race of Farm Operator

This chapter presents figures of farm-operators classified by colour, tenure and race, statistics of number and acerage of farms and values of specified classes of farm property. The definition of a farm is on the basis of operating units rather than ownership tracts. Data of this nature will be very useful in discussing the problems of sub-division of holdings etc. There has been considerable discussion about the evils of sub-division of property in India due to the inheritance laws prevailing in the country. But if this sub-division does not affect the holdings of farms according to the definition, it does not affect the efficiency of production. On the other hand, even a large tract of land owned by a single individual may be sub-divided among a large number of tenants leading to evils of sub-division of holdings.

Tenant operators are sub-divided into five classes, namely, (1) Cash, (2) Share-cash, (3) Share, (4) Croppers and (5) Others including unspecified persons. At the time of the census of 1940, nearly 61 per cent of the farms were owner-operated and 39 per cent operated by tenants. Of the sub-classes among tenants share tenants were most prevalent accounting for 34·5 per cent. They were followed in order by croppers and cash tenants with 22·9 per cent and 21·8 per cent respectively. Non-white operators were about 12 per cent of the total and of these, nearly 95 per cent were Negroes. Most of these non-white operators were in the southern states.

Farm Mortgages and Farm Taxes

The mortgage enquiries called for the mortgage status, the amount of mortgage debt and the interest on the first mortgage. The tax enquiries called for details of taxes levied on the real estate in the farm and those levied on personal property on the farms. The data are presented for full-owners and part-owners owning no additional land. For the former, they relate to the entire farms and for the latter only to the owned portion of the farm. The number, value and acreage of farms are classified into three groups according

to mortgage status, namely, those free from mortgages, those mortgaged and those for which there is no report. Farms of mortgage status are also classified by the colour of the operator and his age. Of the farms operated by full owners, those that are mortgaged are generally larger, have a higher average value per farm, and usually have a higher average value per acre than those free from mortgage. During the decade 1930 to 1940, the amount of mortgage debt on farms of full owners declined by 23·1 per cent, while the value of farms operated by them dropped by 28·5 per cent thereby slightly increasing the burden. Part-owners reporting mortgage indebtedness have on average a higher debt and a higher equity per farm than full owners. For the United States of America as a whole, the weighted average rate of interest on first mortgage was 4·9 in 1940.

The real estate tax per $100 of farm value varies from $10·47 to $2·90; the value varies considerably from state to state, even within the same geographic division. There is a noticeable tendency, within states, for the rate to average higher for counties having farm lands of low value than for counties having farm lands of high value. The average personal property tax per farm, like real estate tax, varies considerably from state to state even within the same geographic division. In general, the tax was highest in states reporting high average values of livestock and implements and machinery. This tax for farms of part-owners averaged higher than for those of full owners. Part-owners generally operate large farms and have invested more in implements and machinery than full owners.

Work off Farm, Age and Years on Farm

Farm operators are classified (1) according to the number of days they worked off their farms for pay or income, (2) according to their age and (3) according to the number of years each had operated the farm he occupied on the census date. These are further classified according to the colour of the operator and tenure. According to the census of 1940, two out of seven farm operators worked off their farms for pay or income in 1939 and they spent on an average 137 days per year at such work. This shows that many farmers depend on work other than the operation of their farms for a considerable portion of their income, but there is nothing to indicate the extent to which the entire family income may have been supplemented. Information about income from other sources, e.g., investment, legacies, provisions etc., is also not available. About one day out of eight spent by farm operators outside their farms was as employees in other farms; but no data relating to the kinds of non-farm work of these operators are available. There does not seem to be any material difference in the proportions of owner operators and tenants reporting work off their farms. Full owners, however, generally did more days of work off their farms than did tenant operators, e.g. 166 days in

1939 for the former compared with 106 for the latter. Generally, the proportion of white operators reporting work off their farms was greater than that for non-whites and the average number of days also was higher. Further, a large proportion of them reported non-farm work. The over-all average age of farm operators in 1940 was 48·0 years, the average varying considerably from state to state and being highest in states reporting the lowest percentage of tenancy. "Ownership of farms is definitely associated with operators in the higher age groups." Non-white operators were on an average younger than white operators. According to the 1940 census, farm operators had been on the farms they were operating on that date on an average for 12 years. Tenant operators showed much less stability than owner operators, and white farm operators showed more stability as regards length of occupancy than non-white operators. If, however, comparisons are made between corresponding tenure classes, for many states, the non-white operators had been on their farms for a longer period than the white operators. The apparent paradox is due to the higher proportion of tenant operators represented in the non-white group.

Co-operation, Labour, Expenditures, Machinery, Etc

This chapter gives data relating to a variety of items frequently associated with economic studies of farm operations, namely, co-operative marketing, different categories of farm labour, farm expenditure, covering wages, cattle feed, fertilizers, oil for machinery and other items, motor vehicles on farms, facilities, e.g., tele-electricity, telephone, roads for transport, etc., and residence on farms. According to 1940 census, 22·4 per cent of all farms transacted business with or through co-operative selling, buying or service organizations. It was revealed in the census that in the week 24-30, March 1940, of the total labour on farms, 42 per cent were hired by months, 48 per cent by day or week and 10 per cent on piece work or contract basis, whereas for the corresponding week in September 1939 the respective proportions were 24 per cent, 50 per cent and 20 per cent respectively. The average expenditure per farm reporting was wages $346, feed $219, implements and machinery $326, fertilizers, lime etc. $88, gasoline, kerosene oil etc. $112 and building materials $154. Other interesting details are available about machinery, facilities and residence, into which it is not possible to go in this brief review.

Livestock and Livestock Products

For data in this chapter all inventory items were taken as on April 1, 1940 and production items for the calendar year 1939. The enumeration covered only livestock and their production on farms. The term livestock includes not only horses, mules, cattle, hog, sheep and goats, but also poultry, bees and fur-bearing animals kept in captivity. The values of livestock pro-

ducts are computed values, not those supplied to enumerators in farms. For this purpose, unit values were based upon average prices reported by correspondents to the Division of Agricultural Statistics. The change of census date from January to April had more serious effects on the comparability of livestock statistics due to births, deaths from slaughters, purchases and sales which are susceptible to marked seasonal variations and also possible migration of sheep, etc., with changes in season. The aggregate value of all species of farm livestock enumeration in 1940 was 4,553 million dollars. The combined value of horses and mules represented 26·4 per cent, total cattle values 57 per cent, hogs 6·3 per cent and sheep 5·3 per cent out of the total value. Hogs, sheep and chicken show relatively lower percentages as compared with horses, mules and cattle. But they contribute to the total farm income from sales for slaughter and sales of products in a much more favourable ratio. Milk production is estimated on the basis of the reports of the total milk production during the preceding calendar year, given by farm operators to enumerators. From experience it was noticed that these answers were influenced by the average daily production prevailing about the time of reports; and there is seasonal variation in this production. A downward trend in the production of butter on farms is noticed from census to census; and it is noticed that farm butter making tends more and more towards a farm subsistence basis than for the market. A definite short time cycle is noticed in the production of hogs, their numbers also being sensitive to the production and prices of corn, barley and other major hog feeds. Data on numbers of cattle, calves, etc., reported bought and sold are subject to serious errors of two kinds, (1) from the nature of the questions in which no attempt was made to confine reported sales of animals for slaughter purposes, there being a possibility for recording the sales of the same animals more than once; and (2) due to the incompleteness of coverage in variable degree. Regarding the production of poultry, as no accurate records are kept, the estimates are liable to an undetermined memory bias, added to which is the fact that estimates may be based on actual production at the time of the census. In spite of these limitations, it can be said that since 1930 there has been a remarkable increase in the production of turkeys and to a lesser degree in the production of ducks. A great increase in specialization has taken place in the production of broilers and eggs.

Field Crops and Vegetables

The data include acreage, production and value for each field crop and type of vegetable. In comparing statistics from census to census it should be borne in mind that the acreage of crops and the number of farms reporting are a better index of the general changes in trends in agriculture than the quantity of crop production and its value, because variations in these factors

depend largely on seasonal conditions and prices. The acreage reported for the several crops represents the acreage harvested in the calendar year prior to the date of census, and this naturally will be less than the acreage planted, because of the loss due to crop failure or destruction etc. The latter data are given separately. There is some duplication in acreage data when more than one crop are simultaneously sown in the same area. The total crop land harvested was greater than that in 1934 but less than that of the peak year 1929; and some very decided shifts have taken place also in types of crops raised. For example, there was a lower acreage of cotton, corn and wheat and higher acreage of grain sorghum and annual legumes.

Fruits and Nuts, and Horticultural Specialities

This chapter is devoted to small fruits, tree fruits, nuts and grapes and to nurseries, green houses and similar horticultural specialities—which are distinctly regional. The unit of measure for these crops varies widely among the various regions of production. The data on small fruits include the number of farms reporting, acreage, production and value for each crop harvested in 1939. For fruit orchards, planted nut trees, and vineyards, the acreage is as on April 1, 1940, and similar is the case of the number of bearing and non-bearing trees or vines. Production and value of these fruits and nuts are for the crop season 1939, except the citrus fruits.

Value of Farm Products

The final chapter gives the value of farm products under two general heads namely, "calculated values" and "enumerated values". The former are secured by multiplying the reported figures of production by unit prices. They do not approximate to gross farm income, much less cash farm income, since no deductions have been made for the value of products used by farm households, for seed, for waste, for the feed of livestock, etc., which is duplicated in the livestock income of the farm. On the other hand, the value of several by-products is not included. For livestock products, the calculated values do not fully represent the value of production, because the quantity used in the farm is not taken into consideration. For the enumerated values, the value of farm products sold, traded, or used by households is obtained by enumeration and they may be used as an approximate measure of gross farm income. If the value of farm products used by the households is excluded, the reporting figures represent an approximation of cash farm income. There is duplication of income items caused by the inclusion of inter-farm sales —particularly in livestock breeding areas. In order to arrive at statistics of net income, the figures on specified farm expenditures should not be deducted, because figures for many important farm expenditure items are not available. The cost of livestock purchased is an important item in calculating net income,

as also the rent on tenant farms. Further, income from non-agricultural sources is not included, though with the growth of part-time farming in recent years, this is an important item when comparisons are made involving the economic position of the individual farmer rather than of farming as an industry. In several cases, there was no reporting about the amount of Government benefit payments.

The Appendix reproduces the forms of schedules used in the Census and the detailed instructions to the enumerators.

One important feature that may be noticed is that questions about crops, etc., are changed to suit the regional requirements. Hence, the questionnaire is not uniform for all States with respect to certain questions. This feature should be noted by those engaged in similar work in a big country like India, with several regional differences.

The above survey details the magnitude of the task undertaken by the authorities responsible for the census. With the best of technical advice and the men and money available for the purpose, certain estimates of production and of values are liable to serious error. Great efforts are being made to improve the data; and the analysis and presentation enhance its usefulness to the maximum possible extent. Even in such an advanced country, it is surprising that the estimates of livestock production, employment of labour, etc., are based on the estimate of only particular weeks in the year and on the guess work of farm operators than on farm records kept for the purpose. It should also be recognized that several items of farm expenditure are not available, so that it is not possible to make estimates of net farm income. Similarly, regarding farm-credit, only the mortgage debt is enquired into, and no information is available regarding the nature and methods of all types of agricultural finance. Even regarding the mortgage agricultural debt, only the amount and interest rate are considered, but not the average duration of indebtedness, the different classes of creditors, etc. But these are minor points which do not minimise the immensity of task undertaken.

Several Commissions and Committees on Agricultural problems have been appointed in India, and they have had to make recommendations without having the basic data. Each report contains a chapter on statistics with the usual regrets about the complete lack of data and stereotyped recommendations about the dire need for their collection. It is time that government take up the fact-finding question more seriously and earnestly. There are proposals for the reform of the present systems of tenure; an enquiry into agricultural labour on a sampling basis has already been recommended by the Central Government and may soon be undertaken by the provincial governments. Instead of dissipating energies in a number of directions without a co-ordinated effort, it would be of great use if a thorough statistical

enquiry into all aspects of agriculture were undertaken. In this connection, the Master Sample technique adopted by the United States of America will be found very useful; and it can be conveniently adapted to the special conditions of our country. The greatest return for the available resources in men and money can be obtained by a comprehensive enquiry of that nature. To maintain the continuity of data, it will be necessary to repeat these enquiries periodically. An expenditure of Rs. 30 to 40 lakhs was considered too much for an economic census recommended by Professors Bowley and Robertson in 1934. The country paid very dearly in 1943 in famine, and crores of money had to be spent on imports of foreign foodstuffs and subsidies, a good part of which could have been well avoided, had a proper statistical service been organized and the requirements of the country been properly planned. It is hoped that atleast now this matter will receive due recognition from the Provincial and Central Governments.