

REVIEW OF ACTIVITIES OF THE INDIAN SOCIETY OF AGRICULTURAL STATISTICS FOR THE YEAR 1990

The Indian Society of Agricultural Statistics a scientific body, was founded on 3rd January, 1947 for promoting and undertaking research in Statistics and for its application to Agriculture, Animal Husbandry, Fishery, Agricultural Economics and allied fields. The Society was fortunate to have Late Dr. Rajendra Prasad, the then Minister of Food and Agriculture, Government of India, as its Founder President. He continued to guide the Society for 16 years. The Society had also the privilege of having as its Presidents Shri S. K. Patil, Shri C. Subramaniam, Shri Jagjivan Ram, Dr. M. S. Swaminathan, Dr. O. P. Gautam and Shri Buta Singh. They took keen interest in the activities of the Society and were a great source of inspiration. The Society has attained its present status due to the untiring efforts and guidance of its Presidents in the past and present and particularly of the eminent statisticians Prof. P. V. Sukhatme and Late Dr. V. G. Panse.

The Society organises annually a conference in different parts of the country as per invitations received from State Governments, universities and other research organisations. It provides a wider platform for exchange of ideas. During each annual conference, the Society organises two symposia keeping in view current national interest as well as problems of interest in the region where the conference is organised. The Society brings out a Journal, one volume consisting of three issues per year, which serves as a media for disseminating research findings on Agricultural Statistics and allied fields. Ad-hoc publications and Bulletins are also brought out to help the research workers and students in the field of Agricultural Statistics. It has set up a Research Unit to undertake research on specific problems of current interest in accordance with the guidance provided by a Research Direction Committee. In order to perpetuate the memory of the Founder President Late Dr. Rajendra Prasad, a lecture is organised during the conference. The

Society has organised 26 lectures in the series so far and the memorial lecture being organised during this Conference would be 27th in the series.

The membership of the Society, which is drawn from all parts of India as well as from abroad, during the year was :

Permanent Institutional Members	22
Life Members	330
Institutional Members	5
Ordinary Members	145
Student Members	20

In addition to regular members, the Society has a number of institutional subscribers to its Journal in India and abroad. The number of subscribers during the year was :

Indian	165
Foreign	40

Thus, the total number of members and subscribers during the year was 727.

One of the important activities of the Society, as mentioned earlier, is the publication of its Journal. It has brought out 42 volumes till 1990 and has maintained its time schedule. The Hindi Supplement continues to be a special feature of the Journal. The high standard of the Journal has been maintained due to sincere efforts of the Editorial Board and of the referees. The Society is thankful to them for their keen interest in the activities of the Society particularly in the publication of its Journal. With a view to promoting research in Statistics and thereby improving the standard of the quality of Journal, the Society has introduced a scheme to award prizes for the best articles published in its Journal once in two years.

The 3rd Revised Edition of the book "Sampling Theory of Surveys with Applications" by P. V. Sukhatme, B. V. Sukhatme, Shashikala Sukhatme and C. Asok was brought out during 1984. This book is in great demand by the students and research workers. Another important publication "Statistical Methods in Animal Sciences" by V. N. Amble

brought out by the Society is extremely useful for the research workers in Animal Sciences. Two ad-hoc publications namely, "Contribution in Statistics and Agricultural Sciences" and "Impact of P. V. Sukhatme on Agricultural Statistics and Nutrition" were brought out by the Society which contain a number of invited articles from India and abroad.

The Research Unit of the Society was engaged in carrying out research relating to quantification of socio-economic as well as agricultural development indicators in different states. Since the impact of development depends on indicators of multi dimensional nature, a composite index was built up following an appropriate methodology. The study was conducted in 17 major states of the country covering about 94% of the total area for the years 1971-72 and 1981-82. Two indices were built up for each state one for socio-economic development and the other for agricultural development. As mentioned last year, 14 socio-economic indicators were taken for the study. Apart from this 4 indicators such as, land under agriculture, crop productivity, consumption of fertilisers and irrigation potentials were included for estimating the agricultural development of different states. The indicators were standardised as they were not directly comparable and their standardised values were used for computation of development indices.

The study revealed that during 1981-82, the level of development in 14 states, out of 17 considered, had deteriorated over their development index of 1971-72. A significant reduction in development had been observed during 1981-82 in high development categories as four major states covering about 1/4th of the total population of the country, had shifted to the medium category of development. Similarly about 62% of the population of the country belonging to eight major states were in low developed category during 1981-82. A comparison of agricultural development and socio-economic development indicated that the states of Assam, Bihar, Orissa and West Bengal of Eastern and North Eastern part of the country and the states of Madhya Pradesh and Rajasthan of Central and Central West part of the country were in the low developed category both agriculturally and socio-economically.

The allocation of plan outlays of different states during various plans had been examined for ascertaining the developmental efforts which may help to investigate the causes for inter state variation in development indices. When the resource allocation was examined on the basis of per capita, it was observed that the low developing states of Bihar, Madhya Pradesh, Rajasthan, Orissa and Uttar Pradesh had been consistently lower as compared to other states. Though in Orissa, the plan allocation during the first and third plan periods was satisfactory, its benefit in development indices was not visible. Because of the better resource allocation, the

states of Himachal Pradesh and Jammu and Kashmir could improve their positions to the medium category during the latter period. This suggests that there is a need to improve the resource allocation in the under developed states so as to reduce the inter-state disparities in development.

Efforts are being made to undertake deeper analysis of data at micro level which may throw more light on the subject as planning needs and priorities are different for different areas.

Another study on seasonal and cyclic trend has been initiated by the Research Unit of the Society. It is well known that there is seasonality in milk production. In addition, fluctuations in milk production may also be due to secular trend, cyclic variations as well as random variations. It is considered desirable to know whether a cyclic trend exists and if so, the indicators of such behaviour need to be identified. In order to study the problem, suitable models are to be formulated and tested utilising long term production data in a given region. Such a study will be extremely useful to know quantitatively the addition or shortfall in production so that planning for economic utilisation of surplus milk or effective remedial measures in case of shortfall can be taken. Long term milk production data would be difficult to obtain as the surveys to estimate the milk production in different states are carried out only recently. Attempts were, however, made to know if such data would be available even for a small region. It is heartening to know that data on buffalo milk were available for Kaira district in Gujarat for a period of 13 years (1967-1979). In addition to production (monthwise), data are available on estimates of total number of milch buffaloes and the proportion of buffaloes in milk during the period.

Utilising the available data on the estimates of monthly buffalo milk production in Kaira district of Gujarat for the period 1967-1979, monthly indices of production were worked out following ratio-to-moving average method. The method assumes multiplicative relationship between the components of the time series i.e. the product of factors which are attributed to trend (T), seasonal variation (S), cyclic variation (C) and random variation (R). The method involves four steps namely obtaining centered 12-month moving average, expressing the original data for each month as a percentage of the centered 12 month moving average corresponding to it, getting the average of the ratios for each month over a period of years and using the averages obtained to work out seasonal indices. The division of actual observations for any month by the 12-month moving average centered to that month, eliminates trend and cycles. These ratios now represent seasonal and random variations. When these ratios for each month are averaged over a period of years,

the random variations are removed. These monthly averages over years represent only seasonal variations and were used for calculating seasonal indices. The production indices for different months are as follows:

<i>Month</i>	<i>Index</i>	<i>Month</i>	<i>Index</i>
November	114	May	88
December	125	June	75
January	129	July	71
February	123	August	80
March	113	September	83
April	102	October	97

The seasonal index was highest (129) for January and lowest (71) for July indicating that the production of buffalo milk in January was 29 per cent more and in July, 29 per cent less than the production of an average month.

These seasonal indices were used to get the estimates of monthwise production adjusted for seasonality. Graphical representation of the resultant production data for years showed that there exists a cycle of 4 to 5 years periodicity in milk production. The available data showed that for Kaira district, the production touched the peak thrice i.e. 1968, 1972-73 and in 1978, and attained minimum twice (1970 and 1975) during the decade, 1968-78. This result is however, an indicative of a cyclic fluctuation in milk production. More data need to be obtained for further in-depth analysis.

The factors responsible for milk production are rainfall, availability of fodder and other oilseed crops (cotton and groundnut) in addition to number of dairy animals and their proportion in milk. Data on some of these factors have been obtained and efforts are being made to secure data on remaining factors. The proportion of animals in milk was minimum (50 to 55 per cent) in the month of July in each year. The proportion was higher (75 to 79 per cent) in the months of January and February. The availability of similar time series data along with other factors will help in streamlining the production and utilisation policy in milk collection areas. Appropriate statistical methods for prediction will be utilised in analysing the data so obtained.

Computers are making significant impact in almost every activity of

our country. In the field of development, planning and decision making, computers have become almost inevitable. Statistical computing is a powerful tool in transformation of data for valid and appropriate inferences. Keeping this in view, a special session on "Statistical Computing" has been introduced in the annual conference from the last year and it will form a regular activity of the Society.

The Society has initiated a programme for honouring eminent scientists who have contributed significantly in the field of Statistics and its application to Agriculture and allied fields by awarding them a title "Sankhyiki Bhushan". During 1989, the award was presented to Dr. K. Kishen and Late Dr. Daroga Singh by Hon'ble Shri H. A. Barari, the then Governor of Haryana on the 18th December, 1989 at Haryana Agricultural University, Hisar. In order to provide encouragement and incentives to the young scientists in the field of Agricultural Statistics, the Society has instituted an award "ISAS Young Scientist Award" which is given during the annual conference for the best paper presented.

The problem of finance for scientific activities and printing of its Journal and other ad-hoc publications could be solved to a certain extent through grants-in-aid received from the Ministry of Agriculture, Government of India and Indian Council of Agricultural Research. The Society wishes to acknowledge gratefully the financial assistance received from them during the year under report.

The Society continues to be a Member of the International Statistical Institute and also of the Indian Association of Social Science Institutions. It is also affiliated to the Federation of Indian Societies of Agricultural Sciences and Technology (FISAST).

The last (43rd) Annual Conference of the Society was held at Hisar from 18th to 20th December, 1989 as per invitation received from Haryana Agricultural University, Hisar. The Conference was inaugurated by his excellency Shri H. A. Barari, the then Governor of Haryana. The Society is thankful to him for inaugurating the Conference. Dr. Har Swarup Singh, the then Vice-Chancellor, Haryana Agricultural University, Hisar welcomed the delegates. Dr. N. S. Randhawa, former Director-General, ICAR and President of the Society presided over the function and gave the opening remarks. Prof. P. V. Sukhatme, Executive President of the Society announced the names of eminent scientists, Dr. K. Kishen and Late Dr. Daroga Singh who were selected for the award of Sankhyiki Bhushan. He also read out the citation and his excellency Shri H. A. Barari, former Governor of Haryana, presented the award. Prof. Prem Narain, Secretary of the Society presented the report of the activities of the Society for the year 1989. The chief guest also released the Newsletter of the Society and the Souvenir on this occasion. The

Technical Address "Development Trends in Agriculture in India" was given by Dr. M. N. Murthy, Sessional President. Dr. Umed Singh, Organising Secretary, Haryana Agricultural University, Hisar gave a Vote of Thanks. The "Dr. Rajendra Prasad Memorial Lecture" was delivered by Dr. N. S. Randhawa, former Director General, ICAR and Secretary, DARE, New Delhi. The topic of his lecture was "Problems and Prospects of Irrigated Agriculture". Dr. Har Swarup Singh, former Vice-Chancellor, Haryana Agricultural University, Hisar presided over the memorial lecture. There were two symposia organised at the Conference. The symposium on "Teaching of Mathematics and Statistics at Graduate and Post-Graduate Levels in Agricultural Universities" was presided over by Prof. P. K. Bose and the convenor of the symposium was Dr. Randhir Singh, Principal Scientist, IASRI, New Delhi. The second symposium on "Impact of Cross-breeding Programme on Rural Economy" was presided over by Prof. Prem Narain, Director, IASRI, New Delhi, and convenor was Dr. V. K. Bhatia, Senior Scientist, IASRI, New Delhi. A special session on "Statistical Computing" was organised under the Chairmanship of Dr. M. N. Murthy, Sessional President. Shri R. Gopalan, Principal Scientist, IASRI, New Delhi was the convenor for this session. The detailed summaries of the papers presented at the symposia as well as the recommendations made have been printed in the Journal, Volume 42, No. 1, April, 1990. As many as 45 technical papers were presented at the Conference. The paper reading sessions were organised by conducting two concurrent sessions on two consecutive days. These sessions were presided over by Prof. O. P. Bagai and Dr. K. Kishen. A session for the presentation of papers considered for 'Young Scientist Award' was organised under the Chairmanship of Dr. M. N. Murthy. Three papers were presented and the paper presented by Dr. N. P. Singh, Haryana Agricultural University, Hisar was judged the best. The scientists who assisted the Chairman to judge the best paper were Prof. Prem Narain, Prof. O. P. Bagai, Dr. Padam Singh, Dr. Umed Singh and Dr. A. K. Srivastava.

The Society has conveyed its grateful thanks to the Vice-Chancellor, Haryana Agricultural University, Hisar for organising the last Conference and also to the chairpersons of various sessions as well as to those who spared their valuable time in making the Conference a great success at Hisar.

The Society provided financial assistance to deserving research workers and students to enable them to attend the Society's Conference at Hisar for presenting their papers.

The railway authorities, as in the past, gave travel concessions to the members of the Society and delegates to the 43rd Annual Conference to

enable them to attend the Conference at Hisar. The Society records its grateful thanks to the railway authorities.

The accounts of the Society for the year ending 31st March, 1990 were audited by a professional auditor appointed by the Society and presented at the General Body Meeting.

The work of the Society during the year was made possible through the active help of the members of the Executive Council of the Society, the Editorial Board, and the Research Direction Committee. The burden of the entire Secretariat of the Society has been willingly borne by my colleagues, Dr. Shivtar Singh, Shri S. C. Rai and Dr. Padam Singh. In the end I wish to thank the staff of the Society for their devoted work.

PREM NARAIN
Secretary ISAS