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By S. C. GUPTA<sup>1</sup>

## AGRICULTURAL ECONOMICS IN INDIA<sup>2</sup>

This article briefly surveys the development of agricultural economics in India as a distinct field of specialized study and research and reviews its present state as an applied science. It also analyses some of the major problems in the realm of theory and in practical application which stand as obstacles in the development of agricultural economics as a useful instrument for India's agricultural development.

During the pre-Independence period, agricultural economics as a subject of study and research was based on empirical investigations conducted by official and non-official institutions and individuals. The range and choice of subjects selected for study and the nature of practical problems dealt with were largely those which were related to the practical needs of the British administration.

Since Independence, however, with the advent of national planning and the preparation of a plan for the reorganization of India's agrarian economy for rapid economic development, agricultural economics has blossomed into a fully-fledged scientific discipline of research and training. It has made rapid progress in several directions, through the generous encouragement and financial assistance provided by the national government.

Agricultural economics, as an applied science, however, is confronted with a large number of practical problems the solution of which requires the evolution of an appropriate theory, a practicable methodology and high degree of co-ordination and co-operation amongst scientific workers in related fields.

**I**N India, agricultural economics has developed out of the practical needs of Indian agrarian economy into a distinct field of specialized study and research.<sup>3</sup> The direction and level of development, however, have been limited at different stages by the degree to which these needs have been consciously realized by the government of the country from time to time. The administration in India has always been interested in the state of agriculture, whether for its revenue needs or for bringing about social and economic justice in the countryside and promoting agricultural development. Consequently, it has always been interested in gathering information and thinking about ways and

<sup>1</sup> The author is grateful to Prof. V. M. Dandekar, Dr. J. P. Bhattacharjee and M. C. A. Robertson for their having gone through an earlier draft of this paper and made several suggestions for improvement. They are however in no way responsible for the views expressed or the deficiencies that might have remained. The responsibility for these rests with the author.

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<sup>3</sup> Detailed bibliographical references to the literature have been avoided in this paper. For some sources see Appendix.

means of promoting its improvement. Nevertheless, the recognition of its needs and problems and appreciation of their urgency have not always been as acute as in recent years.

Until recently, British officers governed this vast agricultural country for more than 150 years and tackled the problems that arose in promoting its agricultural development along desired lines. The nature and extent of growth of agricultural economics therefore also depended upon the requirements of the then government of British India. The range and the choice of subjects selected for study, the broad theoretical framework in the context of which studies were made, and the depths of analysis were largely determined by the approach and attitude of the government of the day. In addition, the persons who made important contributions to the subject were also mainly those who had an important role to play in the government and administration of the country.<sup>1</sup>

### I. *Development of Agricultural Economics in the Pre-Independence Period*

Ever since the days of Sir John Shore in Bengal (at the time of Permanent Settlement), an unceasing stream of British officials and administrators have studied the peculiarities of India's agrarian economy. In the regions under their jurisdiction, they have reflected upon agriculture's significance in relation to the economic and political interests of British rule in India. Since they were seeking to transform its institutional basis, although within the limited context of their own fiscal, commercial and political interests, they were continually obliged to study and understand its relevant features. The tools of analysis available were those developed contemporaneously in British universities. There was almost simultaneous application of those tools and concepts in the analysis of India's agrarian situation.<sup>2</sup>

As the new institutional structure was gradually taking shape, the government frequently came up against its repercussions on traditional society. The system of periodic revisions of revenue settlements in different provinces of British India also involved the government in fact-finding activity on a large scale. Further, from about 1830 the

<sup>1</sup> The contributions by individuals like J. C. Jack, Gilbert Slater, H. Calvert, Harold Mann, W. H. Moreland and M. L. Darling and several others illustrate this point for the pre-Independence period.

<sup>2</sup> For detailed illustrations on this point, see S. C. Gupta, *Agrarian Relations and Early British Rule in India*, Bombay, 1963, pp. 159-65; also see pp. 223-7.

British Government adopted the policy of developing India as a source of raw materials—mostly agricultural products—such as cotton,<sup>1</sup> jute, silk, sugar and tea. For this purpose they started promoting public works like irrigation and the development of roads and railways. All these exigencies of administration led to the collection and compilation of a vast amount of agricultural data—historical, descriptive and statistical—in different regions of British India, particularly data relating to conditions of production, trade, transport and marketing of export commodities. This wealth of data not only formed the empirical basis for the formulation of Britain's agricultural policy for India but also provided source materials for those scholars who applied their minds to problems of Indian agriculture at the time, and deliberated on the ways and means of solving them.

Since the last quarter of the nineteenth century, the wealth of these source materials was considerably augmented by others. Several reports were published resulting from Commissions and Committees of inquiry appointed to examine some of the then burning problems of India's agrarian economy, and to suggest solutions. For instance, the Deccan Riots Commission (1875) inquired into the causes of agrarian unrest and peasant indebtedness in India. The Famine Commissions (1880, 1890 and 1901) looked into the causes of famines. The Irrigation Commission examined various aspects of irrigation development policy during 1901 to 1903. Dr. J. A. Voelcker submitted a valuable report on the measures for improvement of Indian agriculture in 1893. The Royal Commission on Agriculture in India (1928) went into a whole range of agricultural policies on various problems and submitted a comprehensive report which is still a valuable source of reference. The Banking Enquiry Committees (Central and Provincial, 1931) went into the question of rural credit and indebtedness. The Bengal Land Revenue Commission (1940) devoted special attention to the problems of *zamindar* tenures. The Famine Enquiry Commission (1945) examined the causes of the severe famine that occurred in Bengal in the middle of the Second World War.

The decennial censuses since 1871 also contain a vast mass of valuable information about the Indian rural economy. Much of the work done by Indian agricultural economists and scholars on the

<sup>1</sup> See M. L. Dantwala's paper on 'Progress in Research in Agricultural Economics in India', in *Studies in Indian Agricultural Economics*, edited by J. P. Bhattacharjee, Bombay, 1958, p. 316.

problems of agriculture in India until about the Second World War was largely based on these sources.<sup>1</sup>

In the two decades prior to Independence, apart from *ad hoc* government commissions and committees of inquiry, a number of individual scholars, and some official and non-official institutions, had also taken up the work of conducting surveys. These consisted of socio-economic investigations in selected villages, studies of costs of production, marketing surveys and a few other general investigations on selected problems. Prominent among the institutions engaged in this work were the Punjab Board of Economic Enquiry, set up after the First World War, the Gokhale Institute of Politics and Economics at Poona (1930), the Indian Council of Agricultural Research (1929), the Visva-Bharti Rural Reconstruction Institute at Sriniketan (1922), the Directorate of Marketing and Inspection (1935), the Division of Rural Economics in the Reserve Bank of India (1945) and the Indian Society of Agricultural Economics (1939).<sup>2</sup> Apart from these, a few universities (e.g. Lucknow, Allahabad and Bombay) and the agricultural colleges at Poona, Allahabad and Kanpur also undertook field investigations on selected aspects of rural life.<sup>3</sup>

Among these developments, the establishment of the Indian Society of Agricultural Economics at Bombay in 1939 may be said to constitute a most important landmark in the progress of the study of agricultural economics. As Professor Dantwala has said: 'It was mainly due to its activities that agricultural economics, as a distinct academic discipline, received recognition.'<sup>4</sup> The difficulties of the food situation during the Second World War, and the inauguration of a planned programme of economic development in the country soon after Independence, had also created the necessary climate for a rapid development of agricultural economics in the years after 1947 to which we shall turn in the second part of this paper.

At this stage it is necessary to draw attention to an aspect of these developments which is usually ignored, but without which it would be difficult to appreciate later developments, viz., the influence of the political movement for Independence on the thinking and ideas in

<sup>1</sup> M. L. Dantwala, op. cit., p. 318; also see *Background Papers on Agricultural Economics in India* by G. D. Agarwal, J. P. Bhattacharjee, S. C. Gupta and Russell O. Olson, mimeographed by the Council on Economic and Cultural Affairs Inc. (now Agricultural Development Council), New York, in July 1958.

<sup>2</sup> *Ibid.*

<sup>3</sup> M. L. Dantwala, op. cit. Also see J. P. Bhattacharjee's paper in *Background Papers on Agricultural Economics in India*, op. cit.

<sup>4</sup> M. L. Dantwala, op. cit.

the country about agricultural development in general, and about the reorganization of its institutional framework in particular. The ideology of the national movement, though an exogenous factor, had a powerful impact on the course of development of agricultural economics ever since the 1880s. It is especially relevant to the consideration of the institutional framework within which Indian agriculture was proposed to be developed in Independent India.<sup>1</sup> The Indian National Congress, through several reports of the sub-committees of its National Planning Committee (1938-48) on agricultural matters, and their resolutions, had projected before the country the image of a rural society in which all agricultural land, mines, quarries, rivers and forests etc., must vest absolutely in the people of India collectively, and in which 'the cooperative principle should be applied to the exploitation of land by developing collective and cooperative farms in order that agriculture may be conducted more scientifically and efficiently, waste avoided, and production increased, and at the same time the habit of mutual co-operation for the benefit of the community developed in place of *individual profit motive*' (emphasis added).<sup>2</sup> In such a society, individual enterprise was to continue, but only during the transitional period and was to be subordinated to the needs of the community. Even in the private sector of the national agrarian economy during the transition period, the co-operative principle was recommended to be introduced to 'whatever extent possible'.<sup>3</sup> Such a projected society was imaginatively described in *Poverty and Social Change in India—a study in the Economic Organization of the Indian Rural Society*, by Tarlok Singh, at present a Member of the Indian Planning Commission, published in 1945. It was given final shape in the report of the Congress Agrarian Reforms Committee set up by the All-India Congress Committee under the chairmanship of J. C. Kumarappa in 1948.<sup>4</sup> These two documents, with many more subsequently added, have as much influenced the shape and direction of development in agricultural economics in post-Independence India as they have influenced the agrarian policies of the Central and State governments.

<sup>1</sup> See Tarlok Singh's (Member Planning Commission) paper on 'India's Rural Economy and its Institutional Framework' in J. P. Bhattacharjee (ed.) *Studies in Indian Agricultural Economics*, Bombay, 1958, pp. 300-15.

<sup>2</sup> *Report of the Advisory Planning Board*, Government of India, Delhi, 1947, p. 187.

<sup>3</sup> *Ibid.*

<sup>4</sup> All India Congress Committee, *Report of the Congress Agrarian Reforms Committee*, New Delhi, 1949. Several eminent academic economists were associated with the deliberations of this committee.

For these reasons, there has been great emphasis amongst Indian scholars on deep and intensive studies into the concrete socio-economic conditions of the Indian peasant and his total economic environment. Problems uppermost in their minds and writings have been those which have appeared to them as the most important determinants of his economic life. In the last decades of the nineteenth century, the central question in the minds of India's national leadership was the burden of government land revenue on the peasant and its relationship with the incidence of famines in different parts of the country. Questions of security of tenure and the relevance of different types of revenue settlements for relieving the burden of revenue and the security of tenure came to occupy an important place in their thoughts and deliberations in later years. During the 1920s and 1930s, especially after the depression, serious concern was evinced regarding the burden of rent and indebtedness on the peasant and the importance of tenurial reform and scaling down of debts for bringing about an improvement in his condition. At about the same time, on account of a steep decline in prices of agricultural commodities, interest also grew in a study of the conditions of agricultural marketing.

Since problems related to land revenue, tenure, indebtedness and marketing dominated thinking, little attention was devoted to studies into the economics of farming as such. The small size and fragmented nature of holdings, the technically backward state of agriculture, lack of irrigation, uncertainties of weather and the helplessly poor condition of the peasant all contributed to this situation. Under such circumstances, institutional problems assumed greater importance.

This political and social influence has helped in reshaping the institutional structure of India's agrarian economy. But it has also created difficulties for the development of agricultural economics as an applied science. The theoretical apparatus of an economist is designed to deal principally with a competitive, *laissez-faire* economy, based on individual profit motive and a free-market mechanism. In such a society, definite classes have already emerged to supply different factors of production like land, labour and capital, as well as enterprise, which are also freely mobile from one use to another. But India's agrarian economy, during the period of British rule, remained in a prolonged process of transition. Its principal features were a gradual change in its productive structure based on isolated, self-



sufficient, autonomous village communities, and the emergence of a new institutional structure composed of landlords, money-lenders, merchants, peasant proprietors and landless agricultural workers. The class of capitalist tenant farmers, which had emerged in Britain in the course of the Industrial Revolution, was conspicuous by its absence in India. This change also accompanied the process of transition from the stage of subsistence towards a monetized and commercial economy. Thus, India's rural economy was only gradually beginning to respond to the free-market mechanism and price incentives, and more for commercial crops raised for export than for food-grains. This process has continued even in the period after 1947, since there were large regions in India in the Princely States in which the break-up of the traditional institutional structure had been rather slow. For these regions, even statistics of acreage and crop production were not available before 1948.

In this transitional environment, the concepts and tools of analysis employed by agricultural economists were generally found lacking for a proper comprehension and analysis of the situation.<sup>1</sup> The economic relationships observed on the farms in any Indian village not being always amenable to explanations in terms of factor-product-price equilibria, the inevitable tendency was to concentrate on descriptions of the structure and complexities of the farm economy.

Consequently, the scope of agricultural economics in pre-Independence India was rather narrow.<sup>2</sup> Collection of data on land tenures and land revenue, acreage, rents, crops, prices and indebtedness was the principal concern in the early days. Some data were also collected to assist in the assessment of irrigation charges for crops, and railway freight rates on agricultural commodities. But since the market mechanism was only gradually beginning to penetrate India's rural economy, and monetization was making only slow inroads into the farm, the analysis of economic relationships in terms of opportunity costs, relative returns on different crops, or returns to different factors of production would have been altogether premature.

For this reason, the scope and perspective of agricultural economics in India has been somewhat different from the developed Western countries. For instance, in the United Kingdom the scope of agricultural economics was defined as follows: 'Starting from the

<sup>1</sup> For instance, see P. K. Mukherjee, *Economic Surveys in Underdeveloped Countries*, Bombay, 1960, pp. 122-34.

<sup>2</sup> J. P. Bhattacharjee's paper in *Background Papers on Agricultural Economics in India*, op. cit.

comparatively constant features of land tenure, climate, and other geographical conditions and the general organisation of farms, the track of agricultural economic research leads through the first operations in the production of farm commodities right to the passing of the commodities into the hands of the consumer, whose circumstances and tastes, in turn, cannot be ignored as factors directing production. It is the charting of this track and the provision of posts and warnings and even the removal of twists and bends and dangerous crossings, that is the work of agricultural economics research.<sup>1</sup> This would be the definition *par excellence* of agricultural economics in any monetized and commercialized agrarian economy. But in India, neither the features of land tenure nor the general organization of farms were relatively constant nor were the tastes of the consumer so predominant in directing production. Here, the producer was, by and large, the consumer of the part of his own product left to him after meeting the share to be given to the government, the landlord and the money-lender. Naturally, therefore, agricultural economics traversed a track very different from the track mentioned in the definition cited above.

Moreover, enough information had still not been collected about the farm economy. For instance, prior to 1930 there were few studies on costs of production of crops on farms in different regions. Nor were sufficient data available about the conditions of trade and marketing in different commodities or about rural life in different parts of India. These could be gathered only by means of surveys of villages and detailed investigations into various facets of their economic and social life. Co-operation, rural credit and finance were other fields in which studies were needed. It is thus significant that as late as 1939, when the Indian Society of Agricultural Economics was established on the initiative of L. K. Elmhirst, with M. L. Darling as President, its principal aim (defined as 'to promote the investigation, study and improvement of the economic and social conditions of agriculture and rural life')<sup>2</sup> was to be achieved only by holding periodical conferences for discussions and by publishing papers, either separately or in a journal.

In these circumstances, agricultural economics in India in the immediate pre-1947 period remained largely in a descriptive stage in which data about a few selected aspects of India's rural economy

<sup>1</sup> Cited in Edgar Thomas, 'Research in Agricultural Economics', *Proceedings of the Eighth International Conference of Agricultural Economics*, Oxford, 1955, p. 281.

<sup>2</sup> *The Indian Society of Agricultural Economics, Retrospect, 1939-1959*, Bombay, 1959, p. 1.

in limited tracts were collected and summarized. Even these facts and investigations were found inadequate for a comprehensive programme of planned agricultural development in 1951, necessitating the collection of new data. But there is no doubt that these early investigations and studies bore fruit in the shape of a small group of trained research workers who formed a basis for agricultural economics to flourish as a discipline and profession in Independent India.

There was passionate awareness shown in these early studies of the economic handicaps of the Indian peasant. His poverty, his small and fragmented holding, low productivity, miserable standard of living and the institutional framework in which he was confined were given considerable attention. Potentialities of development on his farm, if his handicaps could be removed and the agrarian economy reorganized to provide him with a suitable institutional environment, were also stressed. Consequently, solutions offered were broad; for instance, abolition of *zamindari*, land reforms, development of co-operation, reorganization of credit and marketing, mechanization or consolidation of holdings.

## II. *Development of Agricultural Economics since Independence*

With the advent of Independence, agricultural economics soon won recognition as an independent academic discipline of education, study and research. It was no longer regarded as merely an appendage, as hitherto, of its mother-science, Economics. Universities and colleges (though not all) started according it an independent status as a subject. As a profession, too, its development was rapid. Many new opportunities opened up for teaching and research in agricultural economics, as well as for work on agro-economic problems in numerous departments of the Central and State governments. In fact, in the first decade, the increase of opportunities ran ahead of the available supply of suitably trained personnel. This is true to some extent even now, since training and education in agricultural economics have been in the past, and still remain, grossly inadequate compared with the needs.

The demands of administration were one of the most important factors leading to ready acceptance of agricultural economics as a subject soon after Independence. The acute difficulties of food supply in

the country during the war and in the post-war years, the organization of the Grow-More-Food Campaign in 1944, the partition of the country and consequent shortages of cotton and jute for Indian industry, all played their role. But, above all, the national mandate of preparing comprehensive, co-ordinated and integrated plans for social and economic development in all departments of the new Indian Government, created a vital need for trained men. They were to make specialized studies of agricultural problems, advise administrators and policy makers on these matters, and formulate concrete, realistic and practicable plans for agricultural development of India. Even as early as 1947, when 'the objective of agricultural planning' was merely 'to increase agricultural production on a scale sufficient to provide food at a satisfactory standard of nutrition for the whole population . . . and to ensure an adequate volume of cash crops to serve as raw material of industry',<sup>1</sup> the Report of the Advisory Planning Board had laid great emphasis on the need to 'expand and intensify research activities in agriculture at the Central and State Government level'.<sup>2</sup> But, later, as the concept of planning embraced the reorganization of the entire social and economic life of the rural community, the need for expansion and intensification became much greater. Moreover, constant watch was to be kept on the progress and performance of the economy under the plans, as well as on the effects of various legislative and other measures taken from time to time to change its economic *modus operandi*.

The most important official institutions either newly established or reorganized for this purpose were the Directorate of Economics and Statistics in the Ministry of Food and Agriculture, the Research Programmes Committee, the Programme Evaluation Organization in the Planning Commission, the Division of Rural Economics in the Reserve Bank of India, the Census Organization in the Ministry of Home Affairs, the National Sample Survey and the Indian Council of Agricultural Research. The Labour Bureau in the Ministry of Labour and Employment already dealt with the problems of agricultural labour. State governments also set up or expanded their bureaux of economics and statistics to undertake collection and compilation of agricultural data for purposes of planning and research studies and investigations in rural economic problems.

Most important among these institutions is the Directorate of

<sup>1</sup> *Report of the Advisory Planning Board*, Government of India, New Delhi, 1948, p. 7.

<sup>2</sup> *Ibid.*, p. 9.

Economics and Statistics, as reorganized in January 1948. It was entrusted with the task of collection, analysis and interpretation of all relevant agro-economic data required for purposes of formulation of agricultural plans and policies and their implementation. In that capacity, it bears a major responsibility for research in agricultural economics, as well as for providing finance to various institutions for promoting agricultural economics research. The Directorate has classified its tasks as follows:

- (a) Collection and processing of economic data bearing on agriculture from already available sources like official publications, records maintained in the regular course of administration etc.
- (b) Specialized study of agricultural commodities based on data relating to production, prices and trade of each commodity and analysis of supply and demand position in a continuous manner.
- (c) Integrated study of economic measures bearing on agriculture, such as legislation, taxation etc. and publication of the results of such studies, and
- (d) Testing out of proposed changes by means of objective research and study through research units specially organized for the purpose.

With such comprehensive functions to perform, the Directorate has become the principal source of authentic data about almost every aspect of India's rural economy. It is also the chief promoter of research and study in agro-economic problems today, as we shall discuss presently.

Universities and several non-official research institutions also felt the urge to take part on their own in the new adventure of working for an independent, prosperous and more egalitarian rural economy. They wanted to promote investigations and research studies into diverse aspects of rural life which would have direct usefulness in policy formulation and help in the assessment and evaluation of its impact on social and economic development. As a natural corollary to this urge, in December 1950, the Indian Society of Agricultural Economics invited Professor A. W. Ashby, Director of the Agricultural Economics Research Institute, University of Oxford, 'to come to India and tour the country to study the position regarding teaching and research in agricultural economics'. Professor Ashby, in his report

on the state of agricultural economics in India,<sup>1</sup> summed up his observations in the following words :

Having regard to (a) the area of agricultural land, (b) the size of the agricultural population, (c) the importance of agriculture in the national economy—its actual and potential contributions to national wealth—I am appalled at the small provisions made for investigation and research in Agricultural Economics.<sup>2</sup>

He recommended to the 'Government authorities, at all levels, that they should seek extension and development of activities through universities and colleges and through voluntary associations of recognized standing in respect of research, study and teaching in the subject'. This will guarantee scientific independence and integrity of the work and its results, as well as render direct services to cultivators through various forms of organizations, as in several other countries, which did not exist in India. In this context, he also laid special stress on the development of work in 'Farm Organisation and Management'.

Whether as a result of the report of Professor Ashby or for other reasons, there gradually occurred a change in the attitude of the government towards the development of research in agricultural economics. It began to be felt that:

collection and compilation of economic and statistical data to provide a basis for the formulation of policy and the adoption of executive measures have . . . to be kept separate from activities connected with research and surveys relating to economic and statistical problems. . . . Research and surveys take time, have to be unhurried, and need to be free from governmental interference. The collection of data, on the other hand, is an essentially short-period task, has to be rapidly completed, and needs to be directly related to the requirements of government.<sup>3</sup>

It was also realized that 'while the two functions are thus distinct and have to be entrusted to different organizations, it is essential that the organizations should be in close touch with each other and function in a complementary manner'. The departments of the government should be able, in particular situations, to refer the problems involved to research agencies for first-hand investigations, the results of which could become available to the administration for policy formulation. 'Such co-operation between the Economic Adviser

<sup>1</sup> A. W. Ashby, *Agricultural Economics in India*, published by the Indian Society of Agricultural Economics, Bombay, 1950.

<sup>2</sup> *Ibid.*, p. 2.

<sup>3</sup> W. R. Natu, 'The Directorate in Retrospect, 1944-1954', in *Supplement to the Agricultural Situation in India, Souvenir Volume*, November 1954, p. 14.

and the agencies of research would be of great value to both. And the agencies should be both official and non-official and should be availed of as circumstances permit.<sup>1</sup>

The adoption and gradual extension of this approach at various levels in the government marked the beginning of a boom era in agricultural economics. Under the influence of this policy, the government—at the Centre in particular—began to provide generous grants of money to individuals and non-official institutions for the purpose of promoting research and investigations into problems of India's rural economy. In 1954, in response to a proposal from the Delhi School of Economics, the Directorate of Economics and Statistics agreed to set up four agro-economic research centres in four universities, viz. Delhi, Poona, Viswabharati and Madras. These centres have since been considerably expanded and four more centres have been established at Gwalior, Jorhat, Vallabh Vidyanagar (Anand) and Allahabad. These centres were set up in different regions of the country mainly with a view to promoting regional studies of socio-economic changes in the countryside occurring as a result of planned development. The functions of these centres have been laid down as follows:

1. To make a continuous study of changes in the rural economy by means of surveys of a number of selected villages each year; the surveys to be repeated in the same group of villages at intervals of five years.
2. Conduct *ad hoc* investigations into problems of interest to the Ministry of Food and Agriculture, e.g. the effect of various agrarian legislations or administrative measures concerned with, or of price changes on, the rural economy.
3. Undertake research on fundamental problems relating to agricultural economics of the country.
4. Give technical advice to the Government of India and State governments on such issues as with mutual agreement may be referred to the Centres.

In addition, the Directorate of Economics and Statistics, in collaboration with the Research Programmes Committee of the Planning Commission, also sponsored a number of studies into the Economics of Farm Management in six typical crop regions of

<sup>1</sup> Ibid.

India, through the universities and agricultural colleges. These have since been extended to other regions. The Indian Council of Agricultural Research, which had for a long time been concerned primarily with research into technical aspects of agriculture, is also now taking interest in research in problems of agricultural economics. It constituted a Scientific Committee for Agricultural Economics in 1954 for initiating research schemes and recommending them to the Council for grant of funds. This Committee has sponsored a good number of research projects on various problems, especially on production and land-use economics, cropping patterns, farm management, mechanization, marketing and prices, economics of irrigation and fertilizer use, and case studies of co-operative farms.

In the wake of such generous encouragement from official agencies, the departments of economics and agricultural economics in universities and colleges, and the new institutions of research, have been drawn quite close to the administration. They are conducting research on problems of direct interest to the government for policy purposes; or they help in accumulating information about the rural economy of India which is of indirect benefit for agricultural planning. From these studies, the administration seeks answers to problems which it does not have the leisure to investigate deeply itself.

However, it does not mean that all basic materials for policy formulation are provided only by non-official research workers. For research work, or collection of materials, on which policies are based, government agencies initiate their own investigations. They get the data collected, tabulated and analysed by officials. Thus, while on the one hand a large volume of research is promoted through non-official institutions to meet broad requirements of policy, there is an equal, if not larger, volume of research work done on problems of agricultural economics within the closed rooms and corridors of government departments. This is usually not accessible to research workers and circulates only amongst officials under labels such as 'Confidential', 'Preliminary', 'For Official use only'. Only a portion of it is published, usually with a large time lag when its relevance for scrutiny of current policies is already long past. How much of this official and non-official research is actually utilized for policy formulation and exactly in what manner never gets known to anyone outside the Government.

With all these efforts, a large volume of research material about India's agrarian economy has been accumulated in recent years. For



instance, the agro-economic research centres in different regions have prepared about 300 reports of socio-economic investigations in villages situated in different parts of India and subject to diverse forces of change. The investigations have been conducted over the years 1954-5 to 1964-5. As many as 84 of these villages have already been resurveyed, reports of which have either been completed or are under preparation. These centres have also completed a large number of *ad hoc* studies on various subjects such as food administration, agricultural prices and marketing, consumption, co-operative farming, economics of irrigation, marketed surplus, agricultural labour etc. Similarly, three series of farm-management investigations have been completed in various crop regions of India. A number of research projects on the economic effects of land reforms on the agrarian economy in different states of India (sponsored by the Research Programmes Committee of the Planning Commission) have been completed, and some of these have been published.

In addition, several All-India surveys have been conducted by the Reserve Bank of India, the Ministry of Labour and the National Sample Survey on some major problems of the rural economy. In 1951-2, the All-India Rural Credit Survey was undertaken with a view to examining the structure, requirements and resources for rural finance in India. After that, since 1956-7, follow-up surveys on rural credit have been undertaken annually by the Reserve Bank in selected districts in order to keep track of changes in the structure of agricultural credit. More recently in 1961-2, an All-India Rural Debt and Investment Survey has been carried out, the results of which are expected to become available in the near future.

In 1950-1, the Ministry of Labour conducted an extensive survey on the wages and conditions of work of agricultural labour in India. The object of this survey was to collect data on employment, earnings, levels of living and indebtedness of agricultural workers in the Indian Union with a view to recommending protective and ameliorative measures for them, including fixation of minimum wages for improving their living conditions. This survey was repeated in 1956-7, and comparative results of both inquiries became available during 1960. Since certain changes were made in the concepts and methods of collection of data between the two surveys, considerable discussion took place about the comparability of data collected and the validity of the findings. It is now proposed that this survey be carried out for the third time.

In 1953-4, the National Sample Survey conducted a survey on the pattern of ownership and operational land holdings in the rural and urban sectors. At about the same time, a census of land holdings throughout the country was undertaken by the various State governments at the instance of the Ministry of Food and Agriculture. The sixteenth and seventeenth rounds of the National Sample Survey have yielded valuable data on land holdings. The results of these inquiries have been available for some time and constitute the only sources of information about the size and distribution of owned and cultivated land in India.

In addition, the decennial censuses of 1951 and 1961, particularly the latter, were also considerably expanded in their scope to include collection of data on a number of agricultural problems. For instance, in the 1961 census, for the first time, data about occupational distribution and owned and cultivated land holdings have been collected not only for individuals but also for 'households'. In addition, 800 villages have been intensively surveyed in different parts of India, as a part of the census work, to make detailed data available about demographic, sociological and ethnic characteristics of rural population in different regions in view of their importance for a programme of economic development.

A large volume of data collected in these and several other studies has not yet been published and is not accessible to research workers. A few mimeographed studies become available only to a limited circle, largely consisting of officials. Consequently, few outside people know how much further work has been done on these sources or how much should be done in a better manner. It is imperative that all these data, studies and reports be pooled together, preserved in a common place and made available to all persons interested in conducting research work on Indian agriculture. At one time, a suggestion was made for the establishment of a Library of Indian Data, where all research materials about Indian agrarian economy and its changing character under the Five-Year Plans could be preserved for use by anyone interested. But, in the absence of official support, this idea remained merely a suggestion. It will be worthwhile for the Indian Society of Agricultural Economics to take up this matter as its Silver Jubilee Year (1965) task and make it an integral part of its programme of activities for the future.

A number of studies have been made by other agencies like the Programme Evaluation Organization of the Planning Commission,

the Punjab Board of Economic Enquiry, the Indian Society of Agricultural Economics, the Central Directorate of Extension, Intensive Agricultural Development Programme authorities, the National Institute for Research in Community Development and Co-operation and universities and colleges. USAID and Ford Foundation authorities have also been conducting studies in some problems through foreign visiting scholars or through their own officials. These institutions have undertaken specialized studies into operational problems directly or indirectly relevant to current problems of agricultural development. In addition, a large number of independent research scholars, Indian as well as foreign, have published their studies on diverse aspects of India's agrarian economy and its economic and sociological problems.

The fields covered in these studies are: land reforms, farm management and farm planning, marketing and prices, rural credit and finance, economics of irrigation and river-valley development, mechanization of farms, acceptance of improved agricultural practices, co-operative farming, marketed surplus, food administration, community development and co-operation, socio-economic changes in villages, problems of regional development etc. Some of these, for which details were available, have been listed in the references given in the Select Bibliography at the end of this paper.

### III. *Some problems of development of agricultural economics: problems of co-ordination and planned development of research*

Agricultural economics after Independence has been confronted with several problems in the promotion of a planned programme of purposive research. Since a large number of official and non-official agencies have been set up, it has become necessary to co-ordinate their work and ensure that there is no duplication of work or waste of scarce technical resources. This is possible if some stocktaking is done of what has been achieved during these past few years and in what directions further research work need be promoted. It requires the collection of all available research materials at one or a few places (preferably in some non-official institution), an assessment of the level and quality of analysis attained in these studies, and serious thinking on their methodological and analytical deficiencies which might have prevented these studies from becoming as useful for practical purposes as they could have been.

Undoubtedly, problems for research for a long time to come will continue to be suggested by the changing requirements of a dynamic and growing agricultural policy in India. But the concepts and tools and methods of analysis certainly deserve to be subjected to rigorous scrutiny. Methods and procedures of sponsoring research projects need to be so improved as to ensure good quality research performance from the beginning. In this context, it is noteworthy that 'several concepts used in analysing the more developed Western societies are either inapplicable to Indian conditions or need modifications'.<sup>1</sup> There is, therefore, vital need and wide scope for much original work by Indian scholars in agricultural economics. But leaving that apart, even basic theoretical assumptions behind familiar tools of analysis and statistical methods, including sampling procedures etc., must be carefully gone into before a research project is sponsored. Clear prior formulation of a given problem, and prescription of proper methods of sampling and tools of analysis to be used, must be insisted upon before a programme of research for policy formulation is sponsored or embarked upon. This is essential because if a research project is promoted without laying down its objective, hypotheses to be tested, methods of analysis etc. in detail and with clarity, it is almost certain that the end-product of research work will be found deficient for the purposes for which it is intended.

### *Problems of training, teaching and education*

The need for such a cautious approach in promotion of research in agricultural economics arises because conditions of training, education and teaching of the subject are far from satisfactory in India. The level and efficiency of training acquired by a large number of research workers is not adequate to make them independent research workers, capable of handling a research problem on their own. This competence is usually acquired in the process of actually working on the job, opportunities and conditions for which vary widely in different institutions. Agricultural economics, paradoxically, still remains a 'learn while you work' profession. Under these circumstances, numbers of trained persons are limited, and good-quality research work develops only slowly. Serious consideration, therefore, must be given to the problems of teaching, education and training in applied agricultural economics. The objective should be to produce competent fully trained agricultural economists who may be entrusted with the

<sup>1</sup> M. L. Dantwala, op. cit., p. 325.

task of investigating and analysing concrete problems of India's agricultural development and suggesting concrete solutions.

An effort in this direction was made in 1954 when the Government of India invited two American experts, Professor J. D. Black and Dr. H. L. Stewart, to advise on problems of research, teaching and public administration of agricultural economics in India. These experts stayed in India for precisely 66 days and made suggestions about ways in which research, instruction and public administration of agricultural economics could be strengthened in the country. But since they had 'lacked . . . time to study and get to know more of the agricultural economic problems of India, and of what is now being done about them by Indian economists and by Government agencies, State and national', they left it for the Government of India 'to translate' their suggestions 'into terms fitting the Indian situation'.<sup>1</sup>

It is not known whether the report was at all thus 'translated' and to what extent 'into terms fitting the Indian situation'. In recent years, however, the Indian Council of Agricultural Education has constituted a committee of experts to look closely into the problems of teaching and instruction in agricultural economics in the universities and colleges at graduate and postgraduate levels. It will be some time before their deliberations are completed and the fruits of their labours become available.

In the meanwhile, it is suggested that for training competent research workers and agricultural economists, existing research institutions may start one-year specialized diploma courses in agricultural economics, to be given to a group of selected students who have already taken their Master's degree in Economics, Statistics or Agricultural Economics. In these specialized courses, emphasis must be on the student undertaking a practical project of research, involving him not only in collection of data from the field but also in the study of all available material on that problem from secondary sources. He must also be trained through lectures, seminars and discussions in the practical application of theories and tools of analysis, knowledge of which he has already acquired in his academic training at post-graduate level, to existing problems in the Indian rural economy. Having thus worked for a year under the guidance of senior research workers in the profession, he can perhaps be relied

<sup>1</sup> J. D. Black and H. L. Stewart, *Report on the Research, Teaching and Public Administration of the Economics of Agriculture for India*, 1954, pp. iii.

upon to become sufficiently trained, experienced and competent to take up a problem and analyse it as an independent research worker.

*Problems of an appropriate theory*

Apart from these, there are deeper, more fundamental problems that stand as obstacles to the progress of agricultural economics as an applied science in India. Their genesis lies in the theoretical roots of economic science, which have a relevance mainly to advanced, fully monetized, mature capitalist economies. In those economies, through a long period of development of market relations, farming has come to be viewed largely from a business point of view and is analysed on a 'Farm Business' basis. But in agrarian economies like India, where family labour with few or no alternative opportunities for employment constitutes a major input in agriculture, and a substantial portion of self-produced output is consumed by the producing family, it becomes unrealistic to analyse the peasant farm economy only with the help of sophisticated neo-classical theories based on profit maximization principles. Many studies conducted on the basis of Western theories have led to curious results. For instance, the studies into economics of farm management, conducted in six typical regions, already mentioned, showed that most Indian farmers, in all regions, were engaged in farming despite heavy losses from year to year. These losses were shown to be incurred when imputed values were applied for standard items of cost found in any business enterprise, viz. rent of owned land, wages of self-employed labour and interest on owned capital.

Moreover, modern economic theory is based on the assumptions of individual profit motive, free *individual* choice in a free market, free mobility of factors of production and harmony of individual and social interests. But these assumptions in the economic environment of Indian agriculture are not so realistic. The village community as a unit of *social* organization, despite its slow and gradual disintegration under the British rule, has still a significant influence on a peasant's economic decisions. The immobility of most factors of production, especially land and labour, and lack of alternative opportunities for their employment, are still solid facts of India's slowly developing economy. The conflict and disharmony of individual economic interests within the village is a fact well known to most scholars of rural India. Hence, there arises a gulf between inherited economic theories

and the real situation in the agrarian economy on the ground. While the agricultural economist employs the concepts of 'profit', 'wage', 'interest' and 'rent' to various shares of the agricultural product enjoyed by different factors of production, at the farm level most of these shares are received by the farm family as a composite income on all its resources of ancestral land, family labour, and inherited capital employed in agricultural production. This gives rise to a serious problem of imputation of values for these different shares. Imputation is usually made according to the prevalent market rates of these incomes, if they can be found, or on the basis of rates prevalent in urban markets. But an economist turns around and shows the absurdity of such imputation procedures for proper economic analysis. And from a commonsense point of view, he appears to be right.<sup>1</sup>

Again, there is a vast difference in India between the volume of agricultural output on the farm and supply in the market. Influencing these two supplies are the preferences and decisions of the peasant about how much output to sell in the market, how much to keep for his seed, feed and family consumption requirements and how much to stock for speculative purposes. These preferences and decisions are not entirely a function of market prices but depend upon numerous structural factors. Indian agricultural economists have devoted considerable attention to this aspect in recent years, which is a unique phenomenon in all under-developed countries. They have found that the relationships of prices to these two parts of agricultural supply are rather complex. There are notable deviations from the basic assumptions of economic science. If they are ignored, there results an extreme air of unreality about most price analyses, which become irrelevant and useless for practical purposes.

This situation calls for the need to modify even the well-known concepts of 'costs of production', 'income', 'profit', 'capital formation' etc. as accepted in the West since these are inapplicable to Indian farms. All this points towards the need for bold departures in the conceptualization and understanding of India's agrarian realities.

<sup>1</sup> See the controversy on the method of evaluating cost of family labour in farm-management surveys conducted in India: *Economic Weekly, Annual Number, 1962*, A. K. Sen, 'An Aspect of Indian Agriculture'. Also see subsequent articles on the same subject in later issues. Another interesting article on the same theme is 'A Post-Marxian Theory of Peasant Economy: The School of A. V. Chayanov', by Daniel Thorner in *Ibid. Annual Number, 1965*.

### *Problems of methodology*

Similarly, in the realm of methodology, especially with the application of statistical theories of sampling and methods of analysis, major difficulties arise. While large-scale surveys with random sampling of farm households or farms as units of study can be regarded as quite scientific, the extent of variability and heterogeneity among these units in different regions of India is very large. This makes them largely incomparable with one another and puts serious limits on making generalizations on the basis of such surveys. An acre of land in one region of the country is altogether different in its economic significance from an acre of land in another region. The significance of debt per acre in West Bengal is very different from that in the dry unproductive areas of Rajasthan. An employment figure of 200 days per year for an agricultural worker in Punjab connotes something altogether different from the same figure in Orissa or Bihar since the content and rewards of such employment vary widely. Consequently, despite initial enthusiasm for carrying out large-scale sample surveys of broad problems, the trend of thinking has recently been shifting to more specific, problem-oriented, purposive studies in depth of small homogeneous regions where a problem may be more thoroughly analysed and understood in the context of the totality of rural economic life. For this purpose, intensive need has been felt of demarcating the agrarian regions of India according to varying conditions of soils, climate, topography, crop patterns and modes of farming. But in the absence of sufficient data not much progress has yet been made in this direction.

### *The need for a developmental approach*

An important obstacle in the growth of agricultural economics is the basic dichotomy between two approaches towards economic problems, viz. allocational efficiency approach and economic development approach. Viewed from the first point of view, the whole purpose of economic analysis is only to examine whether the allocation of *given* resources to different uses in given market price conditions is optional or not. But in a developmental context the problem is to raise the entire economy to higher levels of output, income and employment, with major changes in the allocational pattern of the existing and new resources. Between these two approaches there are, as yet, many dark areas. It is not known



precisely what are the forces that lend dynamism to the process of development and on which the State must operate to encourage more rapid economic development. The movement of the Indian rural economy from one level of equilibrium from an allocational point of view to another level of optimal allocation is retarded by innumerable difficulties. And an agricultural economist has an important role to play in the investigation of these dynamic factors. But if he remains entangled only in the models of allocational efficiency of *given* and *existing* resources, much of his work would remain only of academic value to the development-minded administrator.

#### *The importance of non-economic factors*

An associated problem is that of making a distinction between 'economic' and 'non-economic' factors in the analysis of an economic development problem. In recent years, it has been increasingly felt that 'non-economic' factors—social, political and cultural—are perhaps as important for explaining the behavioural variables of a peasant economy as the economic ones. Yet surprisingly enough there is still no adequate theory which would provide a framework for an integrated analysis of these economic and non-economic factors in a causal sequence. Rural sociology is trying to fill this theoretical vacuum without much success yet.

The recent extension of mathematical and statistical techniques of analysis in agricultural economics has complicated the situation further. A large amount of effort is spent on application of sophisticated techniques and tools of analysis (borrowed from advanced Western economies) on inadequate and imperfectly collected data. Sometimes, specialization in the use of these tools is of such high degree, and preoccupation with them so intense, that even hypotheses about economic relationships sought to be tested through those techniques are not properly formulated. The result is that their end-product is often looked upon with a large degree of scepticism. Even where these studies have been well planned and competently executed, the results have often been found to be quite trivial for developmental purposes. Historical time series data do not provide sufficient basis for projections because many structural changes in the economy are in progress and technology, as a result of Five-Year Plans, tends to change, even though slowly. Cross-section data analysis at a point of time seem unconvincing since the adequacy of the size of the samples and their representative character are in doubt.

#### IV. *The future of agricultural economics in India*

All these difficulties point only in one direction, viz. the Indian agrarian economy in the present epoch is undergoing a process of structural change in which the *qualitative characteristics* of farm organization, marketing and credit structure, land, labour and capital resources etc. are rapidly changing under the impact of extension of commodity production, commercialization, monetization and government programmes of development. The agricultural economist in India will have to take such changes fully into account while he investigates any problem. As and when the measuring-rod of money penetrates into a traditional farm economy, and its resource-use and production decisions begins to be influenced by market considerations, a whole series of changes begins to occur in the organization of the farm, the character of its inputs and output and the psychology and behaviour of the farmer. But as a process, this phenomenon tends to be rather prolonged. Consequently, the structural parameters in the context of which the behaviour of economic variables is analysed are in a continuous process of change. It is, therefore, necessary that the nature, direction and characteristics of these general changes in the economy as a whole are precisely located and identified before the significance and importance of many other changes taking place in the Indian rural economy can be fully grasped.

Even the micro-units of Indian economy, viz. farms and farmers, are under the overwhelming pressure of these general processes of structural change in the economy as a whole. They are constantly seeking to adjust their household economies in the changing environment. In such a situation, much of the research work in agricultural economics has to be of a diagnostic nature. It has to probe deeply into the anatomy and physiology of India's agrarian system as a whole and discover the laws of its metabolic process. Then only will it become possible to direct development along planned lines. Various programmes of structural reorganization of farms into viable economic units, whether through co-operation or through other methods, can be made a success only when such understanding is created. These programmes run alongside the normal processes of reorganization of farms initiated by the market forces. The two kinds of structural changes cannot be examined in isolation from one another.

There are, no doubt, areas and problems in which higher levels of analytical refinement can be and have been attained. For instance, in

macro-level studies of production, acreage, productivity, prices etc. considerable scope has opened up for use of refined techniques. Similarly, for small numbers of commercial farms, farm management and cost of production studies could be of great practical value. There is vast scope for careful studies into the economics of water and fertilizer use on commercial farms. But, in the context of the whole country, these areas and problems are still limited. The vast terrain of agricultural economics is still covered with an uncleared jungle of institutional and descriptive analysis.

Valuable insights into the current processes of transition in India's agrarian economy are available from studies on comparative agrarian history in which the processes of agricultural transition in other countries such as Russia, Japan and France have been analysed. Even more pertinent are some studies by Marxist and non-Marxist scholars on the processes of development of capitalist relations in agriculture, and their manifestations and consequences in the agrarian structure.<sup>1</sup> Current developments in India are reminiscent of the processes of development analysed by classical economists like Adam Smith, e.g. the extension of division of labour in the countryside, changes in occupational distribution, changes in the social composition of those who hold and cultivate land, enlargement of the market for village produce outside and for urban goods in the villages etc. All these changes should make one ponder whether the classical political economy developed by Smith, Ricardo and Marx, rather than neo-classical economics looking only at optimal allocation of given resources, would be more relevant for understanding India's current economic problems.

In this context, agricultural economics in India stands on a threshold. Its scientific horizons and methodological frontiers have to extend beyond those already given to it by traditional, conservative, neo-classical economic science. The science has to grow under the challenge of India's gigantic developmental problems. Its theoretical

<sup>1</sup> These studies have generally been made in the specific context of some countries and are not sufficiently general to be applied directly. One has to sift the material and take over their general principles, if one wants to make use of them for understanding the current processes of India's agricultural development. See, for instance, Daniel Thorner, op. cit. Also see a few articles in which attempts have been made to examine the degree of development of capitalist relations in Indian agriculture in *Enquiry*, Miscellany (published from Delhi) nos. 2, 3, 4 and 6 and *Enquiry*, vol. 1, nos. 1 and 2 (old series nos. 7 and 8); and in Seminar no. 38 October 1962 and no. 86 May 1966. Also see Bhomani Sen, *Evolution of agrarian relations in India*, Delhi, 1962 and Gregory Katovsky, *Agrarian Reforms in India* Delhi, 1963.

apparatus has to be enriched from all sources—classical, Marxist or modern; its armoury of tools and techniques has to be equipped after careful choice from the sciences of statistics, mathematics and econometrics. And a firm basis for economic analysis of technological problems has to be laid with the help of the associated agricultural sciences, particularly soil science, agronomy and animal husbandry. In addition, sociology has to provide it with insights into those social processes through which agricultural development gathers momentum in underdeveloped countries. The implicit value premises behind all inherited theories, and their hidden assumptions, have to be explicitly understood, and rejected or accepted before much scientific progress can be made. It is only then that agricultural economics can be said to have grown and matured as an applied science in Independent India.

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## APPENDIX

AGRO-ECONOMIC RESEARCH STUDIES IN INDIA<sup>1</sup>1. *List of Studies conducted by Agro-Economic Research Centres*<sup>2</sup>1.1. *Agro-Economic Research Centre, Delhi*

<i>Subject</i>	<i>Year of initiation</i>	<i>Remarks</i>
<b>I. MARKETING AND CONSUMPTION</b>		
<i>(a) Food Policy</i>		
Food Administration in Punjab and U.P. 1946-53. An analysis of price control, procurement and distribution of foodgrains	1954-5	Published
<i>(b) Fair Price Shops</i>		
An Enquiry into the working of Fair Price Shops in Delhi, U.P. and Punjab	1964	Completed
<i>(c) Prices</i>		
1. An Enquiry into the Decline of Agricultural Prices in selected Markets of U.P. and Punjab—May-June, 1954	1954-5	Completed
2. Decline of Agricultural Prices in U.P. and Punjab—A study of its causes and effects in Hapur, Chandausi and Moga during May-June 1955	1955-6	Published
3. Behaviour of Agricultural Prices in Selected Markets of U.P. and Punjab—1952-62	1960-1	Study of wheat and rice prices completed, study of gram prices in progress

<sup>1</sup> Lists based on information.

<sup>2</sup> In addition to the studies listed here the Agro-Economic Research Centres have carried out a number of village surveys and resurveys in different parts of the country. The staff of the AER Centres have prepared a number of occasional Papers on the basis of survey data.

	<i>Subject</i>	<i>Year of initiation</i>	<i>Remarks</i>
<i>(d) Marketing</i>			
1.	Report on Market Arrivals of Foodgrains in the Markets of U.P. and Punjab—1958-9 Season	1959-60	Published <sup>1</sup>
2.	Producers' Response to Changes in Prices and Marketing Policies—A Case Study of Sugar-cane and Paddy in Eastern Uttar Pradesh	1962-3	Published
II. IRRIGATION RATES			
1.	Economics of Irrigation Rates in U.P. and Punjab	1958-9	Completed
2.	Some Aspects of Irrigation Development in Northern India	1962-3	Completed
III. AGRICULTURAL LABOUR			
1.	Impact of Economic Development on Agricultural Labour	1962-3	Completed
IV. AREA DEVELOPMENT			
1.	Problems and Prospects of Economic Development in the Hilly Region of Punjab—Based on case studies of selected villages in the Kangra and Kulu Valleys of the State	1959-60	In progress
V. CO-OPERATIVE FARMING			
1.	An Enquiry into the Working of Some Co-operative Farming Societies in U.P. and Punjab	1956-7	Completed (in press)
2.	Co-operative Farming in Pilot Project Areas in U.P., Punjab and Delhi—An Evaluation of Progress and Problems	1963-4	Completed
3.	Co-operative Farming in Pilot Project Areas in U.P., Punjab and Delhi—Second Round	1964-5	In progress
VI. ANALYTICAL STUDIES IN IADP DISTRICTS			
1.	Effectiveness of Crop Demonstrations—A Study of Wheat Demonstrations in Aligarh District, U.P.	1963-5	Completed
2.	Growth of Credit Co-operatives under the IADP in Aligarh District	1964-5	In progress

<sup>1</sup> Published by the Directorate of Economics and Statistics in the volume *Report on Market Arrivals of Foodgrains—1958-59*.

<i>Subject</i>	<i>Year of initiation</i>	<i>Remarks</i>
3. Profitability of Package Programme on Cultivators' Holdings in District Aligarh	1965	In progress
VII. MISCELLANEOUS		
1. Impact of PL 480 on Indian Economy (Ph.D. Thesis)		In progress
2. Economics of Farm Management in U.P. (Ph.D. Thesis)		In progress
1.2. <i>Agro-Economic Research Centre, Madras</i>		
I. MARKETING AND CONSUMPTION		
(a) <i>Food Policy</i>		
1. An enquiry into the Measures of Food control, Procurement and Controlled Distribution and their Effects on the Agrarian Economy	1955-6	Published
(b) <i>Fair Price Shops</i>		
1. Operation of Fair Price Shops in the Southern Region	1964	Completed
(c) <i>Prices</i>		
1. A study of trends of Seasonality and Fluctuations in the prices of rice, jowar, ragi, groundnut and cotton in the Southern Region	1963-4	Completed
(d) <i>Marketing</i>		
1. Enquiry into the Pace and Pattern of Flow of Supply of rice into the markets of Tanjore, Tirunelveli and Coimbatore	1959	Published <sup>1</sup>
II. CROPPING PATTERN AND PRODUCTION		
1. Factors influencing Cropping Pattern in South Arcot and North districts		Completed
III. IRRIGATION RATES		
1. Economics of Irrigation and Water rates in Cauvery-Mettur Project	1955	Printed
IV. AGRICULTURAL LABOUR		
1. Changes in the condition of Agricultural Labour in South Indian Villages	1964	Completed

<sup>1</sup> Ibid.

<i>Subject</i>	<i>Year of initiation</i>	<i>Remarks</i>
<b>V. CO-OPERATIVE FARMING</b>		
1. Study of the working of Co-operative farming societies in Madras State	1956	Completed
2. Assessment and Evaluation of Progress of Co-operative Farming Societies	1962-3	Completed
3. Evaluation of Co-operative Farming Societies (Second Round)	1965-6	In progress
<b>VI. ANALYTICAL STUDIES IN IADP DISTRICTS</b>		
1. The changes in the Structure and Functioning of the Co-operative Credit Societies and the role of credit in Package Programme Area (Thanjavur District)	1962-4	Completed
2. The changes in the Structure and Functioning of Co-operative Credit Societies and the Role of credit in the West Godavri District	1965-6	In progress
<b>VII. MISCELLANEOUS</b>		
1. Changes in the Agrarian Structure in some South Indian Villages		In progress
2. Level of Development and Indebtedness —A cross-sectional study of eight South Indian Villages	1965-6	In progress
<i>1.3 Agro-Economic Research Centre, Poona</i>		
<b>I. MARKETING AND CONSUMPTION</b>		
<i>(a) Food Policy</i>		
1. A study of Measures of Food Control, Procurement and Distribution of Food-grains and their Effects on the Agrarian Economy relating to the erstwhile Bombay State	1954-5	Printed
<i>(b) Fair Price Shops</i>		
1. An Enquiry into the Working and Clientele of Government Fair Price Shops	1955-6	Completed
2. Study on Fair Price Shops	1964-5	Completed
<i>(c) Prices</i>		
1. Study of behaviour of Agricultural Prices	1962-3	In progress
2. Relative trends of agricultural wages and prices of cereals in various parts of India during the pre-war and post-war years	1965-6	In progress



	<i>Subject</i>	<i>Year of initiation</i>	<i>Remarks</i>
<i>(d) Marketing</i>			
1.	Marketing of Paddy/Rice in Igatpuri Taluka	1960-1	In progress
<i>(e) Regulated Markets</i>			
1.	Structure and Organization of Regulated Markets: Barsi Regulated Market, Sholapur District, Maharashtra State	1963-4	Nearing completion
II. CROPPING PATTERN AND PRODUCTION			
1.	Factors influencing cropping pattern in (i) selected villages in Nanded District (ii) selected villages in Satara District	1957-8	Completed
2.	Study of Cultivation of Potato, Onion, Banana, Grapes, Cotton and Groundnut	1958-60	In progress (Based on village studies)
3.	Factors influencing Cropping Pattern of individual holdings in four villages in Jalgaon District, Maharashtra State		In progress
III. IRRIGATION RATES			
1.	Management and Pricing of State Canals in India with Special reference to Bombay Deccan, 1850 to 1960	1958-9	Completed
IV. AREA DEVELOPMENT			
1.	A study of Economic Change in the Area of Pravara Co-operative Sugar Factory	1956-7	In progress
2.	Wardha District Development Plan	1961-2	Completed
3.	Development Plan for Goa	1964-5	In progress
4.	Development of Cotton in Kumthadharwar tract in Mysore State		In progress
V. CO-OPERATIVE FARMING			
1.	Assessment of Progress and Evaluation of Co-operative Farming Societies in Maharashtra and Mysore States	1963-4	Completed
VI. MISCELLANEOUS			
1.	Effects of Bombay Prevention of Fragmentation and Consolidation of Holdings Act, 1947 (Village Arphal in North Satara District)	1963-4	Completed

<i>Subject</i>	<i>Year of initiation</i>	<i>Remarks</i>
2. A Study to Assess the Effects of the Intensive Drive for the Removal of Untouchability in Maharashtra State (10 villages) in Districts of Buldhana and Nasik	1960-1	Completed
3. Maintenance of Farm Account Books by Sons of Farmers and literate Farmers, in Wai Taluka, Satara district	1962-3	In progress
4. Survival Rates of Male and Female Live-stock and Sex Ratio in Adult Cattle for each district of seven States in India based on Livestock Census Data	1963-4	In progress
5. Agricultural Extension Service in Nasik and Ahmednagar district, Maharashtra State		In progress
6. Study of Land Legislation in Maharashtra State		In progress

#### 1.4 *Agro-Economic Research Centre, Viswa Bharati*

##### I. MARKETING AND CONSUMPTION

###### (a) *Food Policy*

- |  |      |           |
|--|------|-----------|
| 1. Food Administration in East India and its Effects on the Rural Economy  | 1956 | Completed |
| 2. Snapshot Survey of Production, Consumption Marketable surplus, Stock holding and Financing and Flow of Foodgrains in East India | 1957 | Completed |

###### (b) *Fair Price Shops*

- |  |      |           |
|--|------|-----------|
| 1. Working of Fair Price Shops in East India | 1957 | Completed |
| 2. Study of Fair Price Shops                 | 1964 | Completed |

###### (c) *Prices*

- |   |      |             |
|---|------|-------------|
| 1. Outlook on Production and Prices of Rice in Bihar, Orissa and West Bengal  | 1957 | Completed   |
| 2. A study of the Behaviour of Agricultural Prices in East India (Rice, Wheat, Maize, Gram, Jute and raw sugar)—1953-61 | 1962 | In progress |

###### (d) *Marketing*

- |  |      |                        |
|--|------|------------------------|
| 1. Report on Market Arrivals, Pace and Pattern, 1958-9 | 1959 | Published <sup>1</sup> |
|--|------|------------------------|

<sup>1</sup> Published by the Directorate of Economics and Statistics in the volume *Report on Market Arrivals of Foodgrains—1958-59*.

<i>Subject</i>	<i>Year of initiation</i>	<i>Remarks</i>
<b>II. AGRICULTURAL LABOUR</b>		
1. Study of Labour employed on the Mayurakshi Project	1955	Completed
2. Consumer Price Index and Wages for Agricultural labour in the Western Range of West Bengal	1959	Completed
3. A Study of the Socio-Economic Conditions of Agricultural labour in East Indian Villages	1962-3	Completed
<b>III. CO-OPERATIVE FARMING</b>		
1. Experiments in Co-operative Farming—A Study in East India	1957	Printed
2. Assessment and Evaluation of Co-operative Farming Societies	1963-4	In progress
3. Evaluation of Co-operative Farming Societies—Second Round	1965-6	In progress
<b>IV. ANALYTICAL STUDIES IN IADP DISTRICTS</b>		
1. An evaluation of the IADP in Sambalpur, Orissa	1964	Completed
2. An evaluation of the IADP 1964 in Shahabad, Bihar	1964	Completed
<b>V. MISCELLANEOUS</b>		
1. Abstract of Economic and Social Statistics of East India	1957	Printed
2. Capital Formation in Selected Villages of East India	1963-4	In progress

*1.5 Agro-Economic Research Centre, Gwalior*

**I. MARKETING AND CONSUMPTION**

*(a) Consumption*

- |  |        |           |
|--|--------|-----------|
| 1. Consumption of cereals and Substitutions of inferior cereals by superior cereals  | 1961-2 | Completed |
| 2. A comparative study of some aspects of levels of living in two villages subject to different degrees of influence of industries | 1962-3 | Completed |

*(b) Prices*

- |  |        |           |
|--|--------|-----------|
| 1. Seasonal variation of wholesale prices of selected agricultural commodities in Madhya Pradesh, 1953-7 | 1961-2 | Completed |
|--|--------|-----------|

<i>Subject</i>	<i>Year of initiation</i>	<i>Remarks</i>
2. Behaviour of agricultural prices in some markets of Madhya Pradesh	1961-2	Study of Jowar prices completed Study of Maize prices in progress
<i>(c) Marketing</i>		
1. Pace and pattern of market arrivals of food-grains	1959-60	Published <sup>1</sup>
2. Working of Fair Price Shops	1964-5	Completed
II. CROPPING PATTERN AND PRODUCTION		
1. Cropping Pattern of Madhya Pradesh	1961-2	In progress
III. AGRICULTURAL LABOUR		
1. Rural Labour in Seven Villages of Madhya Pradesh	1962-3	Completed
IV. AREA DEVELOPMENT		
1. Rural Bhopal—A study of Four Villages in the neighbourhood of Heavy Electricals	1959-60	Completed
2. Some Economic Aspects of Agricultural Development of Chambal Valley	1959-60	Completed
V. STUDIES IN IADP DISTRICT OF RAIPUR		
1. Study on Co-operative Credit in Raipur district		In Progress
VI. CO-OPERATIVE FARMING		
1. Assessment and Evaluation of Co-operative Farming Societies in Pilot Project Areas in Madhya Pradesh	1963-4	Completed
2. Evaluation of Co-operative Farming Societies—Second Round	1965-6	In progress
VII. SOCIOLOGICAL STUDIES		
1. A Comparative Study in some Aspects of Cohesion and Division in Tribal and multicastric villages of M.P.	1962-3	Completed
2. Sociological Study of the Bhils Bamanta Gahwan	1961-2 1962-3	Completed Completed

<sup>1</sup> Published by the Directorate of Economics and Statistics in the volume *Report on Market Arrivals of Foodgrains—1958-59*.

<i>Subject</i>	<i>Year of initiation</i>	<i>Remarks</i>
<i>1.6. Agro-Economic Research Centre, Jorhat</i>		
I. MARKETING AND CONSUMPTION		
<i>(a) Food Policy</i>		
1. State Trading in Paddy in Assam	1960-1	Completed
<i>(b) Fair Price Shops</i>		
1. A Study of Fair Price Shops	1964	Completed
<i>(c) Prices</i>		
1. Agricultural Prices in North East India	1962-3	In progress
II. AGRICULTURAL LABOUR		
1. Changes in conditions of Agricultural Labour (Case studies of three villages)	1962-3	Completed
III. VILLAGE LEADERSHIP		
1. Changing Pattern of Village Leadership in North East India	1961-2	Completed
IV. CO-OPERATIVE FARMING		
1. Assessment and Evaluation of Co-operative Farming Societies	1963-4	Completed
2. Assessment of Co-operative Farming in Assam—Second Round		In progress
V. ANALYTICAL STUDIES IN IADP DISTRICTS		
1. Farmers' Response to Improved Agricultural Practices under IADP—Cochar District Assam		Completed
VI. MISCELLANEOUS		
1. Farmers' Response to the use of Fertilizers in Nowgong District Assam	1965-6	In progress

*1.7 Agro-Economic Research Centre, Vallabh Vidyanagar*

I. MARKETING AND CONSUMPTION		
<i>(a) Consumption Pattern</i>		
1. Shifts in consumption pattern from inferior to superior cereals	1962-3	Completed
<i>(b) Fair Price Shops</i>		
1. Working of Fair Price Shops in Gujarat	1964-5	Completed

<i>Subject</i>	<i>Year of initiation</i>	<i>Remarks</i>
<i>(c) Prices</i>		
1. Study of behaviour of agricultural Prices	1963-4	In progress
<i>(d) Marketing</i>		
1. Marketing of Cotton in Sabarkantha District of Gujarat		
II. CROPPING PATTERN AND PRODUCTION		
<i>(a) Production</i>		
1. Production function for a sample of farms of selected villages	1962-3	Completed
2. Economics of cotton cultivation in Sabarkantha district of Gujarat	1963-4	In progress
3. Economics of well irrigation in a Rajasthan Village	1963-4	Completed
III. AGRICULTURAL LABOUR		
1. Agricultural Labourers in Four Indian Villages	1963-4	Printed
IV. AREA DEVELOPMENT		
1. Socio-economic survey of villages in the Command Area of the Dantiwada project in Ranskantha District	1963-4	Completed
2. Socio-economic survey of Borsad Taluka in Gujarat	1965-6	In progress
V. CO-OPERATIVE FARMING		
1. A Case study of co-operative farming in Ganeshpura village, Rajasthan	1962-3	Completed
2. Assessment and evaluation of co-operative farming societies	1964-5	In progress
3. Assessment and Evaluation of Co-operative Farming Societies in Gujarat and Rajasthan—Second Round	1965-6	In progress
VI. ANALYTICAL STUDIES IN IADP DISTRICTS		
1. Factors contributing to the acceptance of improved practices in the Desoori Tehsil of Pali District, Rajasthan	1964-5	Completed
2. A Study of Farm Plans in the Bardoli Taluka in the IADP District of Surat	1965-6	In progress

<i>Subject</i>	<i>Year of initiation</i>	<i>Remarks</i>
VII. MISCELLANEOUS		
1. The cost of Milk Production in a Kaira District Village—A Pilot study	1963-4	Completed

1.8 *Agro-Economic Research, Centre, Allahabad*

I. FAIR PRICE SHOPS

1. Working of Fair Price Shops	1964-5	Completed
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II. MISCELLANEOUS

1. Assessment of the progress of Rural Man-power Utilization Scheme in Allahabad District, U.P.	1965-6	In progress
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1.9 *Agricultural Economic Research Section of the Institute of Economic Growth, Delhi*

<i>Subject</i>	<i>Remarks</i>
1. An analysis of Agricultural land in India by Size of Holding and Tenure	Completed
2. Location of Foodgrains Storage in India (Part I)	Completed
3. Location and Economics and Storage for Major Foodgrains in India (Part II)	In progress
4. Cotton Production and Price Policy	Completed
5. Production Function costs and returns in Hyderabad Farms	Being printed
6. Regional Variation in Agricultural Development in India 1951-61	In progress
7. <i>Ph.D. Thesis of Shri S.N. Misra:</i> Livestock Demand and Supply Conditions in India	In progress
8. <i>Ph.D. Thesis of Shri Majumdar:</i> Demand for Agricultural Commodities	In progress

2. *Farm Management Studies Sponsored by the Directorate of Economics and Statistics*

<i>State</i>	<i>Coverage of Study District</i>	<i>Year of study</i>
Section I (Studies for which Reports have been published or are under print)		
1. Punjab <sup>1</sup>	Amritsar & Ferozepur	1954-5 1955-6 1956-7

<sup>1</sup> Studies financed by the Research Programmes Committee.

<i>State</i>	<i>Coverage of Study District</i>	<i>Year of Study</i>
2. Madras <sup>1</sup>	Salem & Coimbatore	1954-5 1955-6 1956-7
3. Uttar Pradesh <sup>1</sup>	Meerut & Muzaffarnagar	1954-5 1955-6 1956-7
4. West Bengal <sup>1</sup>	Hooghly & 24 Parganas	1954-5 1955-6 1956-7
5. Maharashtra	Ahmednagar & Nasik	1954-5 1955-6 1956-7
	Akola and Amraoti	1955-6 1956-7
6. Andhra Pradesh	West Godavari	1957-8 1958-9 1959-60
7. Orissa	Sambalpur	1957-8 1958-9
8. Punjab	Karnal, Rohtak & Jind Tehsil of Sangrur	1961-2
Section II (Studies for which Reports not yet published or which are in progress)		
1. Orissa	Sambalpur	1959-60
2. Bihar	Monghyr	1957-8 1958-9 1959-60
3. Mysore	Bangalore	1959-60 1960-1 1961-2
4. Bihar	Shahabad	1960-1 1961-2 1962-3
5. Punjab	Karnal, Rohtak and Jind Tehsil of Sangrur	1962-3 1963-4
6. Kerala	Alleppey & Quilon	1962-3 1963-4 1964-5
7. Madhya Pradesh	Raipur	1962-3 1963-4 1964-5
8. Rajasthan	Pali	1962-3 1963-4 1964-5

<sup>1</sup> Studies financed by the Research Programmes Committee.



State	Coverage of Study District	Year of study
9. Mysore	Mandya	1962-3 1963-4 1964-5

### 3. Operational Studies in IADP Districts

The following types of studies are being carried out in the IADP districts:

- (i) Benchmark and Assessment Surveys being carried out by staff specially appointed for the purpose in the IADP districts (these surveys are in progress in all the IADP districts except six blocks selected in Jammu and Kashmir)
- (ii) Studies of specific problems:
  - (a) Operational studies being carried out by district staff appointed under the IADP programme.
  - (b) Analytical studies being carried out by the Agro-Economic Research Centres (position indicated in the section relating to Agro-Economic Research Centres).

The position of operational studies is indicated below:

#### I. STUDIES ALREADY COMPLETED

##### (a) Ludhiana (Punjab)

1. Operation of fertilizer sub-depots in Ludhiana district.
2. Study of the preparation and implementation of intensive and extensive farm plans for kharif 1961.
3. Study of crop demonstrations during Kharif 1961 in Ludhiana district.
4. Assessment of the medium-term minor irrigation taccavi loans administered in the Package Programme, Ludhiana.
5. An Evaluation study of utilization of medium-term taccavi loans for minor irrigation advanced to cultivators in Ludhiana district.
6. Cultivators' awareness and knowledge of Package Programme and the nature of contacts with the extension staff, Ludhiana district.
7. Cultivators' attitudes towards adoption of chemical fertilizers in IADP, Ludhiana.
8. Attitudes of farmers towards the adoption of insecticides and pesticides in IADP, Ludhiana.
9. Study to determine acceptance of improved agricultural implements and equipments by cultivators in IADP, Ludhiana.
10. An Exploratory study on the nature of VIW's field assignments and activities during November-December 1962.
11. Attitudes and opinions of Block Development staff regarding crop Production Plan—Package of Practice Approach, Ludhiana.
12. A Socio-Economic survey to determine possible work opportunities for different groups in village Sanghol.
13. Study of Agro-Economic Condition of cultivators in IADP, Ludhiana.

*(b) West Godavari (A.P.)*

1. Operational efficiency of fertilizer depots in West Godavari district.
2. Field demonstrations and improved agricultural practices.
3. Systems of land tenures and their effect on the agricultural development of the district.

*(b) West Godavari (A.P.)*

4. Consumption of fertilizers.
5. Farming systems and practices followed by the cultivators.
6. Role of co-operatives in IADP.

*(c) Raipur (Madhya Pradesh)*

1. A survey of the problems and the bottlenecks in the process between the preparation of farm plans and the credit therein indicated being made available to the cultivators.
2. Operation of fertilizer depots in Raipur district.
3. Reactions of cultivators towards use of chemical fertilizers.
4. Role of co-operatives in IADP.

*(d) Aligarh (U.P.)*

1. A comparative economic study of the cultivation of wheat as a pure crop v/s wheat sown with mustard in lines in Aligarh district.
2. A study of the composite wheat demonstration programme, its effects in IADP District-Aligarh.

*(e) Thanjavur (Madras)*

1. Factors responsible for variations in production loan (cash and kind) recommended, applied for in the farm plans, and actually utilized.
2. Study of awareness and acceptance of full package of practices.

*(f) Shahabad (Bihar)*

1. Study on the nature and extent of participation of members in Co-operative Societies in the IADP Blocks.
2. Study on the coverage of improved paddy seeds in the IADP Blocks.
3. Study of cost of cultivation of paddy 1964-5 in IADP and non-LADP areas of Shahabad.

## II. STUDIES IN PROGRESS

*(a) Ludhiana (Punjab)*

1. The multiplication of wheat seed through registered growers in LADP, Ludhiana, during Rabi 1963-4.

*(b) West Godavari (Andhra Pradesh)*

1. A Study of the awareness and knowledge of cultivators relating to LADP, West Godavari.
2. Attitude of farmers towards the use of insecticides and pesticides in LADP.
3. Effects of Farm Planning on cultivators in West Godavari.

*(c) Raipur (M.P.)*

1. Study of demonstrations.

*(d) Aligarh (U.P.)*

1. The operation of fertilizer sale points including transportation, distribution and use of fertilizer in Aligarh district.
2. Attitude of cultivators towards adoption of chemical fertilizers.

*(e) Thanjavur (Madras)*

1. The Study of the effect of the composite demonstrations in the villages on the acceptance of the package of practices and the factors responsible for it.
2. Study of the farmer's reluctance to pay off his loan in kind by linking his credit with marketing or by pledge of produce.

*(f) Pali (Rajasthan)*

1. Study on demonstrations.
2. Impact of Farm Planning.

*(g) Shahabad (Bihar)*

1. The slow increase in coverage of IADP Shahabad.
2. Timeliness and Adequacy of supplies made available to the cultivators under IADP Shahabad.
3. Double-cropping and its effect on crop fields in IADP Shahabad.

#### *4. Agro-Economic Research Studies Sponsored by the ICAR*

<i>S. No.</i>	<i>Scheme</i>	<i>Institution conducting the study</i>	<i>Year of initiation</i>	<i>Remarks</i>
1.	Economics of multi-purpose river valley project in India	Delhi School of Economics	1954	Completed
2.	Enquiry into effects of lift irrigation	Osmania University, Hyderabad	1961	In progress
3.	Enquiry into economics of irrigation	Director of Agriculture, Madras	1961	Completed
4.	Method and practice of farm accounts	Gokhale Institute of Politics and Economics, Poona	1955	Completed
5.	Study of the intensive cultural practices on small-holdings	Calcutta University	1956	Completed
6.	Study of economics of bunding	Maharashtra Government	1959	Completed
7.	Cost of production of vegetables in the Punjab	Director of Agriculture, Punjab	1960	Completed

<i>S. No.</i>	<i>Scheme</i>	<i>Institution conducting the study</i>	<i>Year of initiation</i>	<i>Remarks</i>
8.	Scheme for appraisal of overall benefits of improvement in farming and possibilities of budgeting approach to improve the farm earnings in Bihar	Director of Agriculture, Patna	1961	
9.	Study of mechanized farming	Director of Agriculture, Madras	1960	Completed
10.	Study of mechanized farming	The Principal, College of Agriculture, Banaras Hindu University	1959	Completed
11.	Enquiry into factors influencing cropping pattern on individual holdings	Government Agricultural College, Ludhiana, (Punjab)	1961	Completed
12.	Enquiry into factors influencing cropping pattern on individual holdings	Director of Agriculture, Patna	1961	Completed
13.	Enquiry into factors influencing cropping pattern on individual holdings	The Principal, Utkal Krushi Mahavidyalaya, Bhubaneswar	1959	Completed
14.	Enquiry into factors influencing cropping pattern on individual holdings	The Principal, Balwant Rajput College, Agra	1960	Completed
15.	Enquiry into factors influencing cropping pattern on individual holdings	The Principal, College of Agriculture, Bapatla.	1962	In progress
16.	Operational research for studying the extent to which improved agricultural practices are being adopted and their economics in Coimbatore and Salem Districts	Director of Agriculture, Madras	1961	Completed
17.	Study of spread of various improved agricultural practices recommended for increasing crop production in the State of Madhya Pradesh	Madhya Pradesh Government	1962	Completed
18.	Operational research relating to adoption of improved agricultural practices in Punjab	Punjab Government	1963	Completed

<i>S. No.</i>	<i>Scheme</i>	<i>Institution conducting the study</i>	<i>Year of initiation</i>	<i>Remarks</i>
19.	The nature and extent of non-farm employment in rural area of Thana District of Bombay	School of Economics and Sociology, University of Bombay	1955	Completed
20.	Survey of farm and non-farm employment in South Arcot District	Annamalai University	1958	Completed
21.	Studies in the behaviour of consumption and marketing	The Gokhale Institute of Politics and Economics, Poona	1960	Completed
22.	Enquiry into pattern of consumption of rural families in Varanasi	Banaras Hindu University	1963	In progress
23.	Sample survey to determine effects of mechanization of fishing craft in the Bombay State	Industries and Co-operative Department, Bombay	1960	Completed
24.	Study of economic and social conditions of the people of Ghataprabha, (left bank canal area)	College of Agriculture, Dharwar	1959	In progress
25.	An enquiry into the impact of minor irrigation on Varanasi Farm Economy	Banaras Hindu University	1965	In progress
26.	Effect of Bhakra Project on the Farm Economy of different regions of Punjab	Punjab Government		Yet to be started
27.	Scheme for the study of adoption of improved agricultural practices	Punjab Agricultural University	1965	In progress

*5. Studies carried out by Programme Evaluation Organisation  
(Planning Commission)*

I. EVALUATION OF COMMUNITY DEVELOPMENT PROJECTS

1. Evaluation Report on First Year's Working of Community Projects (May 1954).<sup>1</sup>
2. Community Projects—First Reactions (August 1954).<sup>1</sup>
3. Evaluation Report on Second Year's Working of Community Projects (vols. i & ii) (April 1955).<sup>1</sup>
4. Evaluation Report on Second Year's Working of Community Projects. Summary (April 1955).
5. Evaluation Report on Working of Community Projects and N.E.S. Blocks (April 1956).

<sup>1</sup> Out of stock.

6. Evaluation Report on Working of Community Projects and N.E.S. Blocks. Summary (April 1956).
7. Three Years of Community Projects (August 1956).<sup>1</sup>
8. Fourth Evaluation Report on Working of Community Projects and N.E.S. Blocks—vol. i (includes studies on 1. Achievements and Problems of Community Development Programme; 2. Some Aspects of the Community Development Programme) (April 1957).
9. Fourth Evaluation Report on Working of Community Projects and N.E.S. Blocks—vol. ii: (includes studies on 1. Some Aspects of Social change; 2. Enquiry into coverage by Project Programme) (May 1957).<sup>2</sup>
10. Fifth Evaluation Report on Working of Community Development and N.E.S. Blocks: (includes studies on 1. Current Evaluation Study; 2. Acceptance of Practices; 3. Study of Panchayats; 4. Block Records) (May 1958).
11. Fifth Evaluation Report on Working of Community Development and N.E.S. Blocks. Summary and Conclusions (May 1958).
12. The Sixth Evaluation Report on Working of Community Development and N.E.S. Blocks: (includes studies on 1. Planning Process, 2. Cottage Industries; 3. Social Education; 4. Study of Co-operatives—Large and Small) (June 1959).
13. The Seventh Evaluation Report on C.D. & Allied Fields (1960) (includes studies on 1. Current Evaluation Study of 18 selected blocks; 2. Evaluation of the 1958-9 Rabi Crop Campaign in selected areas in Punjab, Rajasthan and Uttar Pradesh; 3. Case Studies-Panchayats and Co-operatives; 4. Some Aspects of Rural Unemployment) (1960).
14. Evaluation of Community Development Blocks—Post Stage II. (In progress.)
15. Summary of Evaluation Studies (1960-1) (1961).

## II. BENCH MARK SURVEYS

1. Bench Mark Survey Report—Batala (Punjab) (Feb. 1956).<sup>2</sup>
2. Bench Mark Survey Report—Bhadrak (Orissa) (1956).<sup>2</sup>
3. Bench Mark Survey Report—Kolhapur (Bombay) (July 1956).<sup>2</sup>
4. Bench Mark Survey Report—Morsi (Madhya Pradesh) (Nov. 1956).<sup>2</sup>
5. Bench Mark Survey Reports—Malavalli (Mysore) and Chalakudy (Kerala) (July 1957).
6. Bench Mark Survey Reports—Banswada (Andhra Pradesh), Samalkot (Andhra Pradesh) and Erode (Madras) Blocks (July 1957).
7. Bench Mark Survey Reports—Pusa (Bihar), Mohd. Bazar (West Bengal) and Arunachal (Assam) Blocks (July 1957).<sup>2</sup>
8. Bench Mark Survey Reports—Pounta (Himachal Pradesh), Bhadson (Punjab) and Bhathat (Uttar Pradesh), Blocks (October 1957).<sup>2</sup>
9. Bench Mark Survey Reports—Manavadar (Bombay), Nowgong (Madhya Pradesh) Raipur (Madhya Pradesh) Blocks (October 1957).<sup>2</sup>
10. Resurvey of eighteen C.D. Blocks—Notes and tables (1965).

<sup>1</sup> Out of stock.

<sup>2</sup> Publications available for sale with the Manager, Government of India Publications, Civil Lines, Delhi-6.

## III. AGRICULTURAL DEVELOPMENT

1. Cotton Extension in PEPSU—A Case Study (1955).
2. Evaluation of 1958-9 Rabi Crop Campaign in Punjab, Rajasthan and Uttar Pradesh (1960).
3. Study of the Multiplication and Distribution Programme for Improved seeds (1961).
4. Study of the Problems of Minor Irrigation (1961).
5. Soil Conservation Programme for Agricultural Land (1962-1965).
6. Problems of Co-ordination in the Implementation of Agricultural Programmes. Cyclostyled (1965).
7. Effectiveness of the Centrally Sponsored Scheme of fertilizer demonstration. (In progress.)
8. Evaluation of major irrigation Projects—Some Case Studies. Cyclostyled (1965).

## IV. CO-OPERATIVES AND VILLAGE INSTITUTIONS

1. Studies in Co-operative Farming (December 1957).<sup>1</sup>
2. Evaluation Report on the Working of the large and Small Sized Co-operative Societies (April 1959).
3. Some Successful Co-operatives—Case Studies (1960).
4. Study of Utilization of Co-operative Loans.
5. Group Dynamics in a North Indian Village (1954).<sup>1</sup>
6. Training of Village Leaders in Bhopal (September 1954).
7. Leadership and Groups in a South Indian Village (June 1955).
8. A Study of Panchayats (May 1958).
9. Some Successful Panchayats—Case Studies (1960).
10. A study of the Lok Karya Kshetras of the Bharat Sevak Samaj (1966).
11. Evaluation of the Gram Sahayak Programme (1961).
12. Evaluation of the working of Consumer's Co-operations organized under the Centrally Sponsored Scheme. (In progress). Interim report cut (cyclostyled).

## V. MISCELLANEOUS

1. Case Studies of the Role of Bullock Carts and Trucks in Rural Transport (1963)/(1965).
2. Problems of extension of Primary Education in rural areas (1964). Under print.
3. Case Studies of Pilot Projects (Series I) for the utilization of Rural Manpower. Cyclostyled (1962).
4. Evaluation Reports on Rural Manpower Projects (1963).
5. Report on Evaluation of Rural Electrification Programme (cyclostyled).
6. Training of Village Artisans in Bihar (May 1955).<sup>1</sup>
7. Study of Village Artisans—(August 1956).
8. Evaluation of Rural Works Programmes (In progress).
9. Evaluation of Development in Tribal Blocks (In progress).

<sup>1</sup> Out of stock.

10. Study of levels of living, consumption and employment and use of improved methods in agriculture etc. (In progress) (Study taken up through State Government)
11. Current evaluation of the Applied Nutrition Programme, 1964-5.

*6. Research Schemes Sponsored by the Research Programmes Committee (Planning Commission)<sup>1</sup>*

<i>S. No.</i>	<i>Scheme</i>	<i>Institution</i>	<i>Remarks</i>
<b>I. STUDIES IN LAND REFORMS, RURAL DEVELOPMENT AND CO-OPERATION</b>			
1.	Survey of Field Labourers' Co-operative Societies	Indian Institute of Economics, Hyderabad	Report published (1964)
2.	Survey of economic and social effects of land reforms in U.P.	Lucknow University	Report published (1965)
3.	Land Reforms in West Bengal —A Study on implementation of land reforms in West Bengal	Calcutta University	Report published (1963)
4.	Effects of land reforms in Orissa	Department of Rural Economics and Sociology, Utkal University, Cuttack	Report under scrutiny
5.	Working of Bombay Tenancy Act, 1948 Report of Investigation	Gokhale Institute of Politics and Economics, Poona	Report published (1957)
6.	Farm Production Planning and programming-Analysis of Farm Management Data	Indian Society of Agricultural Economics, Bombay	Report published (1964)
7.	Research project on rural unemployment	Bombay University	Report under preparation
8.	An enquiry into the working of the Bombay Tenancy and Agricultural Lands Act, 1948 (as amended up to 1953) in Gujarat (Excluding Baroda District.)	Indian Society of Agricultural Economics, Bombay	Report published (1958)
9.	Implementation of tenancy abolition in Gujarat State and emerging patterns of land rights and agricultural production	M.S. University of Baroda, Baroda	Field work in progress

<sup>1</sup> List of Farm Management Studies Financed by RPC is given on p. 37.



<i>S. No.</i>	<i>Scheme</i>	<i>Institution</i>	<i>Remarks</i>
10.	Evaluation of Land reforms in Bihar	Department of Rural Economics, Bhagalpur University	Report under scrutiny
11.	Scheme relating to the study of economic and social effects of land reforms in Rajasthan	Birla College, Pilani	Report published (1965)
12.	Effects of Cost Benefit relation of Bunding projects in Marathwada	JES Arts and SBL Commerce College, Jalna	Report under preparation
13.	An enquiry into the economic and social benefits of consolidation of holdings in Punjab	Khalsa College Amritsar	Tabulation in progress
14.	Consolidation of holdings in Madhya Pradesh (Pilot Survey)	Nagpur University	Report published (1964)
15.	Economic and Social effects of the Jagirdari abolition and land reforms in Hyderabad	Osmania University Hyderabad	Report published (1958)
16.	An enquiry into the effects of the working of Tenancy Legislation in the Baroda District of Bombay State	M.S. University of Baroda, Baroda	Report published (1958)
17.	Effects of land reforms in Saurashtra	Dharmendra Singhji College, Rajkot	Report published (1961)
18.	An Enquiry into the implementation of land reforms legislation in Vidarbha	Nagpur University Nagpur	Report under scrutiny
19.	An enquiry into the implementation of Tenancy Reforms Legislation in Marthwada	People's College, Naded	Report approved for publication
20.	Effects of Jagir Abolition on the land utilization in Udaipur District.	College of Agriculture, Udaipur	Report under scrutiny
21.	Economic effects of Zamindari Abolition in Andhra	Andhra University, Waltair	Report published (1963)
22.	Co-operative Farming in Gujarat	Enquiry Committee, Ahmadabad	Report published (1959)
23.	Study of rural employment conditions of Agricultural and Non-Agricultural Labourers in Shirahatti Taluka of Dharwar District in Mysore State	Institute of Economic Research, Dharwar	Preliminary work completed

<i>S. No.</i>	<i>Scheme</i>	<i>Institution</i>	<i>Remarks</i>
24.	An enquiry into the implementation of land reform legislation in Madhya Pradesh	M.P. Agricultural Research Institute, Jabalpur	Preliminary work Commenced
25.	An Appraisal of implementation of land reforms in Madras State and its effects	Annamalai University	Preliminary work Commenced
26.	Implementation of Land Reforms in Andhra Pradesh	Andhra University Waltair	Preliminary work Commenced

## II. STUDIES IN RURAL ECONOMY

1.	Low Income farmers and low productivity farms in Allahabad (Pilot Survey)	Allahabad University	Report completed
2.	Grain Banks in Marathwada—Working of Grains Banks in five districts of Marathwada	Millind Mahavidyalaya (Aurangabad, Deccan)	Report published (1960)
3.	Problems of Small Farmers—An Enquiry into the problems of low income farmers of Kodinar (Saurashtra)	Indian Society of Agricultural Economics, Bombay	Report published (1958)

## III. STUDIES IN IRRIGATION PROJECTS

1.	Study of relative economics of minor irrigation works in Uttar Pradesh	Lucknow University	Report under revision
2.	Survey of Economic benefits of Sarda Canal	Lucknow University	Report published (1965)
3.	Evaluation of benefits of Damodar Canal	Calcutta University	Report published (1963)
4.	A study of cost and benefits of alternative methods of irrigation	Banaras University	Report mimeographed
5.	Evaluation of benefits of Tribeni Canal	Bhagalpur University	Report in press
6.	Evaluation of benefits of Nizam Sagar project	Nizam's College of Arts, Hyderabad	Report published (1965)
7.	Influence of Mettur Irrigation and Hydro-electric project on Agriculture and Agro-Industries	Annamalai University	Report published (1960)
8.	Evaluation of benefits of Gang Canal	Research Programmes Committee, Planning Commission	Report in press (1960)

<i>S. No.</i>	<i>Scheme</i>	<i>Institution</i>	<i>Remarks</i>
9.	Some economic aspects of the Bhakra Nangal Project	Delhi School of Economics	Report published (1960)
10.	Benefit-cost evaluation of Cauvery-Mettur Project, Madras	Annamalai University	Report published (1963)

## IV. ANALYTICAL STUDIES OF ECONOMIC DEVELOPMENT

1.	Derivation of demand & supply Coefficients of Agricultural Products in India	Jadavpur University, Calcutta	Report under preparation
2.	A study of Indian Sugar Industry as recently emerging export industry	Birla Arts College, Pilani	Report under preparation
3.	Cotton production and price policy	Institute of Economic Growth, Delhi	Approved for publication
4.	All India Rural Savings Survey	National Council of Applied Economic Research, New Delhi	Report published
5.	An empirical study of the degree of monetization in the rural sector in Kerala	Kerala University Trivandrum	Report under preparation
6.	Impact of the Growth of Kothagudem town on the economy of some of the neighbouring villages	Indian Institute of Economics, Hyderabad	Field work in progress
7.	Wages and living conditions of Agricultural Labour in Meerut District	Meerut College, Meerut	Work in progress

## V. PROBLEMS OF REGIONAL DEVELOPMENT

1.	Economy of Fisher Folk in Tranvancore	Economic Research Council, Trivandrum	Report published (1960)
2.	Evaluation of impact of Mettur & Papanasam Project	Annamalai University	Work in progress
3.	Socio-economic Survey of Uttarkhand	U.P. Agricultural University, Pant Nagar	
4.	Socio-economic Survey of Rayalaseema	Sri Venkateswara University, Tirupathi	Report under revision
5.	Social, cultural and economic study of people of Ladakh	University of Delhi	Preliminaries commenced

<i>S. No.</i>	<i>Scheme</i>	<i>Institution</i>	<i>Remarks</i>
6.	Study of processes and problems in the execution of development plans in Uttar Pradesh, with particular reference to Banki & Masanli Blocks (Barabanki)	University of Lucknow	Preliminaries commenced
VI. PROBLEMS OF SOCIAL DYNAMICS AND SOCIAL WELFARE			
1.	Social Revolution in a Kerala Village	Department of Anthropology, Utkal University	Report in press
2.	A Pilot study in leadership and communication in village communities in Madras State	University of Madras	Report under scrutiny
3.	Structure of leadership at the village and block levels	Patna University, Patna	Report under preparation
4.	Communication, decision-making and leadership in village communities of North M.P. (with special reference to C.D. programme)	Department of Anthropology, Saugar University, Sagar	Report under preparation
5.	A Socio-economic Survey of Mewat Region	Jamia Rural Institute, Delhi	Report under preparation
6.	A Sociological Study of a growing town & its relation to the surrounding rural areas	Deccan College, Poona	Report approved for publication
7.	Group Relations in Village Community	Deccan College, Poona	Report published (1963)
8.	Social Change in Mysore Village	Karnatak University	Report approved for Publication
9.	Impact of Planned Industrial Development on Rural Social Structure	Department of Sociology, University of Bombay	Field work in progress
10.	Study of the opinions of people in rural & urban areas regarding land problems	Maharaja's College, Mysore	Report under scrutiny
11.	Change in the traditional culture pattern, value orientation and personality traits of rural people	Institute of Social Sciences, University of Agra	Report approved for publication
12.	Rural Society and Social Change in some villages of Mysore	Maharaja's College, Mysore University, Mysore	Report under scrutiny

<i>S. No.</i>	<i>Scheme</i>	<i>Institution</i>	<i>Remarks</i>
13.	From Simpler culture to industrialization	Ranchi College, Ranchi	Tabulation work in progress
14.	Impact of Urbanization on the Tribals in Ranchi and its Suburbs	Ranchi College, Ranchi	Report under revision

## VII. STUDIES IN POLITICAL SCIENCE AND PUBLIC ADMINISTRATION

1.	Report on the Administrative Survey of the Surat District	Indian Society of Agricultural Economics, Bombay	Report published (1958)
2.	Working of village agencies in development programme in Vidarbha	Nagpur University	Report under preparation
3.	Working of village agencies with special reference to people's participation	Punjab University	Report under revision
4.	A study of public participation in the formulation and implementation of planning	University of Lucknow	Report published 1964
5.	Observation of the functioning of Panchayat Samities in one district of Maharashtra	Centre for Rural Development Studies, Samaj Prabodhan Sanstha, Poona-2	Field work in progress
6.	Role of village panchayats in community development administration in the district of Saugar (M.P.)	University of Saugar, Saugar	Report published 1964
7.	Working of village agencies in Kerala	University of Kerala, Trivandrum	Report under revision
8.	A Comparative Study of the working of Traditional and Statutory Village Panchayats in the Tribal areas of Ranchi District	Ranchi University, Ranchi	Field work in progress

## VIII. RESOURCES FOR DEVELOPMENT

1.	Rural income, savings and investment pattern in relation to income groups in Banaras Tehsil	Banaras Hindu University, Varanasi	Approved for publication
2.	Rural incomes and savings in Gujarat District	M.S. University of Baroda, Baroda	Report completed