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SCOPE AND METHOD OF RESEARCH AND TEACHING IN AGRICULTURAL ECONOMICS IN INDIA

By

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The scope of agricultural economics is very wide and it extends from the individual producer to the social and national policies, attitudes and reactions towards agriculture. The task of an agricultural economist therefore must lead through the various economic operations involved in the production of farm commodities till those commodities reach the final consumer or manufacturer whose preferences and economic circumstances, in turn, cannot be ignored as factors influencing the type and volume of production. The organisation of agricultural economic research and teaching must therefore begin with the individual farm and after going into detailed consideration of the effects of political, social and economic statesmanship and institutions, as well as the effects of consumers' preferences and organisations influenced through markets on agricultural production, must come back again to the individual farmer for the re-adjustment of his farming business. The work of an agricultural economist is thus very wide, much wider than is ordinarily thought of.

It is sometimes claimed that the problems of agricultural economics arise very largely in connection with products which are produced for sale in the market. This is, however, a short sighted view and the chief function of economic study in agriculture should always be to aid the farmer to adjust his farming business in a manner as will enable him to get the maximum for his efforts. It is not the improvement of market enterprises but it is the improvement of his economic and social status and his living which should be the aim of agricultural economics.

The logical procedure of discussion of scope and methods of agricultural economics will, therefore, be to start with farm management. Under farm management the chief aim should be the study of the factors in the internal management of the farm which determine the productivity of the enterprise and of the remuneration of those engaged in it.

Besides its use to the individual farmer and his immediate locality, farm management data will be a sort of background for any national programme, especially in planning out shifts in agriculture. It is not infrequent
that national policies are misdirected in the absence of this background. Apart from the function of studying individual farms, the main object of farm management study will be to get an organised data which will enable each individual farmer to compare his own organisation with the average as standard or with the abnormal or distinct as indicative of line of progress or adjustment. Each individual farm is a complex dynamic organisation made up of distinct enterprises adjusted in such a way as to make the whole business run smoothly. Each of these different enterprises will have to be studied to determine their individual efficiency in the organisation as also the proportions and distribution of the factors of production—land, labour and capital—which may affect the efficiency of the farm as a whole. Note is also to be taken of the fact that the combination of proportions is one thing, the form of embodiment of capital and the form or type of labour is another. In suggesting re-adjustments on individual farms, account will have to be taken of the change in economic conditions and this will perhaps be the most difficult part of farm management study and advice.

After the farmer has produced his crops, the next step will be the disposal of the produce and this should be the next stage in agricultural economic research and study. It is here, at the time of disposal of his produce in the market, that the farmer comes in contact with the outside world and many general and social influences are exercised on the farms through the markets. It may, however, be mentioned that the question of marketing is not equally important on all the farms. In fact, in systems of peasant farming, it forms a small part. On the other hand, where farming is organised for production of commodities for the markets, the methods of sale and distribution have an important function in determining trends or policies of production. As such, the greater part of the time and energy of a student in agricultural marketing will have to be devoted to crops produced for the market. Besides the general conditions under which the produce is taken to the market, the teaching and research should embrace the study of the efficiency of the agencies and mechanism through which the produce ultimately passes to the final consumer and the study of the factors and forces which lie back of the determination of the price of the product.

The third field which may be called the social economics of agriculture is perhaps the widest branch of agricultural economics. Under this, the research will mainly concern with the study of the external factors which determine the course of production which is possible or desirable and those which determine the prices of farm produce and influence the distribution of income. This study of the external factors will include historical studies of long time shifts and trends of production and consumption, geographical studies showing the resources of and shifts in agricultural production, rural population studies, community and rural social development, rural living, land economics including public land policy, land values
and land taxation, agricultural credit and credit institutions, farm mortgages, national policies, especially in connection with tariff in relation to agriculture and development of agricultural production, transport facilities and their influence on rural development and others.

Farm Management

Farm management concerns with the conditions affecting individual farms and as such is a branch of private economics. In its applied aspects farm management economics seeks to show the individual, or the group, how he or they can make the highest incomes. It is thus a study of the conditions of economic welfare of the individual farmer or his group. Farming is not only an art and science but it is also a business and the successful farmer is a business man. Farm management is, therefore, a study of the conditions affecting the farm with respect to the land, labour and capital on the one hand and market and other external conditions on the other, with a view to forming decisions in regard to the selection and combination of enterprises as well as the efficient use of land, labour and capital. As such, farm management research has two functions. First, to increase the efficiency of the individual factors of production and second, to increase the efficiency of their organisation and management. These two functions are not always independent, but one may be the result or cause of the other. The purpose of farm management research is to find ways and means of increasing efficiency and in order to do this properly the research must tackle the problem in a manner which will appeal immediately to individual farmers. Mere theoretical conclusions will very rarely attract a farmer. What he needs is actual practical demonstration of theory on his own farm or, less preferably, on farms in his near neighbourhood.

Perhaps the first consideration in the study of farm organisation is the suitability of the layout and equipment of the farm. However hard-working, intelligent and well-equipped a farmer may be, his labour and capital will not return adequate yields if the land which he farms is unsuitable. Among the factors which determine the suitability of the farm for profitable cultivation, the size, shape, form, compactness of holding and the location of farm buildings are the more important ones. There cannot be one size optimum for all the time and places, but it may, however, become possible to determine for each type of farming one or a few sizes which will give maximum results over a period of time under the existing and expected conditions of capital, labour and demand. In a country like India where land supply is limited, the rural capital scanty and shy and labour relatively immobile, there is little scope of increasing the physical size of farm except at exorbitant cost. The problem then becomes one of discovering the best combinations of the existing supplies of land with the existing supplies and conditions of the other two factors.
Although there is less immediate possibility in Indian agriculture of increasing the area of farms to optimum size except when advantage is taken of co-operative cultivation, it is well recognised that there is a great opportunity for increasing efficiency if farms were made of compact blocks, of suitable shape and form with farm houses suitably located on the holdings. Farming land in one block is conspicuous by exceptions in most parts of India. Holdings are usually scattered, the distance between fields cultivated by the same farmer may be sometimes some miles. The shape of individual fields is anything but regular. Excepting the irrigated fields and lands which are required to hold a considerable quantity of water for their cultivation, as for instance the rice-lands, the fields are usually uneven, unembanked and unfenced. Among the advantages claimed for small farms possibly the chief from an agricultural point of view are that the farmer stays on the holding, supplements capital with his own labour and that of his family and that the cultivation reaches a high degree of intensity. Wherever natural conditions especially in connection with irrigation and transport are favourable and where a fairly large part of the holding is in one block, the farmer does stay on the holding and cultivates to a very high degree of efficiency. But this is anything but common. Most of the farmers live within the village sites and there are places and times when farmers visit the fields only a few times during the year, sometimes only twice, once for sowing and once for harvesting if there be any crop to gather. There are no data in any part of the country of the loss of efficiency resulting from these causes, but it must be enormous. Simple problems of research like the labour hours per acre on a given crop at various distances from homes, ratio of walking time to actual productive work time at various distances, application of fertilizers (if any) at given distances, yields (a) per acre and (b) per time unit of labour (walking plus working) at various distances etc., will furnish a valuable information on the loss that is being incurred in the use of the most costly factor of production, namely, land.

There is also scope of increasing efficiency by proper distribution of capital between land and its improvements, equipment, livestock and circulating capital. On peasant farms the amount of capital invested in improvements and equipment is usually very small and labour takes the place of a large part of capital. Excepting some small favourably situated tracts, there is little which can be called the permanent improvement of land like embanking, fencing, levelling, drainage, farm houses, etc. Most of the equipment and tools are locally made and cost little. The chief advantage of these indigenous implements and tools which used as they have been for generations is the ease in making and repairing. A few of these are really efficient for the purpose meant and there is little that can be improved. But there are others which can be replaced by more efficient ones which will give better work and reduce labour cost. The working livestock is usually ob-
tained locally from breed long deteriorated in efficiency. Circulating capital like seed and manure are farm produced. Better storage and better use of manure will decidedly give better results. There are times when seed of any kind is obtained from anywhere. In tracts where farming is commercialised, as for instance in sugarcane regions, where considerable quantities of fertilizers like the sulphate of ammonia, oil cake and fish manure are used, majority of purchases are made on credit from local commission agents who also act as financiers and selling agents. Considerable saving could be made on individual farms with better organisation for credit, purchase and sale, use of better equipment and materials and permanent improvements of land.

One of the greatest problems of farm management research is the maximum utilisation of human and animal labour as well as of the farm machinery. In fact labour requirements put a limit to the raising of any crop. It is very essential to fit in crops or enterprises which will require attention at different periods so that all available labour may be spread as evenly as possible over the year and to do this intelligently, data on seasonal distribution of labour as well as on the labour requirements of different enterprises become a necessity. On peasant farms the chief criterion in adjusting cropping schemes is not the net profit on individual enterprises, but the duration of employment to the farmer and his family as well as to his work-animals. Indeed a crop may show a net loss, but still may be preferable to another crop showing a net profit simply because of the fact that the crop which shows the higher net profits, or higher return per hour of labour, gives a lower income than the other with a lower return per hour but with a higher total labour requirement which is yet not beyond the normal capacity of the available labour force. The work-animals and farm machinery have to be maintained all through whether worked or not and it is very essential to adjust the farm business in such a way as will provide for their maximum use and thus reduce their unit costs.

The possibility of organising a farm successfully depends to a large extent on the availability of land, labour and capital in quantities desired. When all factors are not available with equal ease and one is more plentiful than the others, the problem of organisation mainly turns to the economising of the less plentiful factor or the replacing of it with the more plentiful one. There are possibly two ways of increasing efficiency of any farm organisation as a whole. Firstly, by increasing the business to a size which will give optimum results for a fairly long period of time and secondly, by reducing wastes and losses and increasing the yields. In a country where the factors of production are mobile, the first way forms an important line of progress. But when this is not so, attempts along the second way have a great future.
The aim of a good farm manager will be to obtain the maximum returns over a series of years making the best possible use of all available labour and capital and without impairing the fertility of land. In deciding on his scheme or organisation he will have to consider for what enterprises the conditions of his land are most favourable. But land is not the only consideration. The questions of labour and capital also have to be considered. Land may be most suitable for a particular enterprise but the cost of labour and capital may render the cultivation unprofitable. Lack of opportunity for and cost of marketing, competition of regions growing the same commodity and of substitutes may also make it unremunerative. The habits, customs and racial preferences as well as personal or local likes and dislikes may sometimes affect the selection of enterprise. Or lack of means may, sometimes, limit the choice. Not infrequently there are a number of enterprises for which the land and other conditions are most favourable. It will very rarely pay to extend or develop one or two of the most profitable enterprises excepting such enterprises as dairying in which there is more uniform utilisation of labour and capital. But good returns are dependent in no small measure upon a considerable percentage of the most profitable crops and it is very essential to know the relative profitableness of the different crops.

Studies of efficiency and of optimum practices with which the selected enterprises are operated constitute one phase of farm organisation research and these will include such things as the substitution of cheaper methods for expensive ones, as for instance, the replacement of labour by machinery, of human labour by animal labour and vice versa; the selection of the most suitable type of machinery, tools and equipment in point of quality and quantity of work and their comparative cost, the choice of operations as harrowing vs. ploughing and hand-weeding vs. hoeing, as well as the elimination of useless and unnecessary operations; the determination of the optimum time for farm operations and of the optimum quantities of labour and material requirements for the various processes in the farm production and the like. In an old country where types of farming are fairly fixed and permanent, there is perhaps limited possibility in the improvement of the choice of enterprises. The crops, which the majority of farmers in any community have been growing for a long time, are generally evolved out of the natural and economic forces as best adapted. Under such condition, possibly the largest improvement in farm organisation lies in increasing the efficiency in the conduct of the several enterprises comprising the farm business.

But the problem can never be wholly divorced from that of the combinations and proportions of the different enterprises. These enterprises are mutually related and their inter-relationships bring forth the
questions of adjustment in the size of each and to a certain extent even of the choice of the competing enterprises. Like all other economic activities, farming is dynamic and the questions of farm management can never be settled once for all. But studies in farm organisation yield certain principles which hold true for a considerable period. They yield such results as the requirements and distribution of labour and material for various processes. Each farm is a composite unit consisting of several enterprises so arranged as to make the whole business run as profitably as possible, in the opinion of the operator whose success, therefore, depends on the soundness of his judgment. The method of accounting demonstrates the profitable enterprises and provides a basis for working out the best combinations as well as suggests ways of improving the less profitable branches. A large number of farm management studies provide averages or standards which are found of great practical assistance to the individual farmer in testing his own organisation in the light of general situation as well as for studying the causes of variations from farm to farm. Because of the wide diversity in the quality of land and of farmers it is not always possible to adopt the standards of practice and of organisation so arrived but the data provided by them are found fundamentally important in working out cropping schemes, particularly in regard to the quantity and time when labour and material are required. They will show what permanent labour is necessary and indicate when extra help is required. If it is not possible to get extra help at the peak periods like sowing and harvesting at reasonable cost, it may become desirable to introduce some labour-saving machinery after working out the comparative costs. Or it may become necessary to adjust crop acreages and introduce supplementary crops which will maintain a more uniform demand for labour. Some crops may be competitive for labour only for certain operations, while they may be complementary for the remaining operations.

The amounts and adjustments of enterprises and the apportionment of land, labou and equipment from the next important stage of farm management study. The principal considerations are the labour requirements of the various enterprises and at different seasons in the year, the relative profitableness of different enterprises as well as the provision for rotation and the distribution of income from the farm enterprise. It is thus bringing together and organising the material obtained from enterprise studies after taking into full consideration the physical and biological possibilities as well as the market and changing economic and social conditions which are affecting and likely to affect the farm business. Even knowing that they are running their business at a loss, the farmers continue to carry on the same system. There is considerable time lag before adjustments take place. It all depends on opportunities in other lines of farming or lines other than farming. If there are no other better lines available, the farmer will
continue to produce at whatever returns he can make and try to reduce costs with a view to reduce losses. Even if there be an alternative which pays better, it does not always become possible to make an immediate shift. Shifting is extremely difficult in agriculture and often means an outlay of expenditure. But even without sudden shifting it does, many times, become possible to adjust the business in a way which will give maximum results. After the complementary and competitive nature of the crops has been determined, one can find out which of the crops adds most to the profits of the farm and study the possibility of increasing the size of such profitable enterprises. The next step will be to compare the relative profitableness of the different competing enterprises and see if it is desirable to select only those which add most to the farm profit as a whole and help to maintain a well-balanced farm unit.

As regards the methods employed in the collection of data, a resume of farm management investigations indicates that there are two principal methods at the disposal of the research worker. The first of these is the accounting method and the second is the survey method. The accounting method is an intensive method used where detailed records continuous for a period of time are used, while the survey, which is an extensive method is employed when less accurate details are required or when the information is required over a greater area or at recurring periods. The accounting may be full cost accounting where detailed cost of labour and material of each of the farm enterprises are separately determined, or enterprise cost accounting where cost of only one or two particular enterprises are studied, or financial accounting where only cash expenses and receipts are analysed. The selection of either of these three accounting methods will depend on the nature of the problems to be studied and the first, thing to be done in clarifying the problems of accounting before one or more of these three methods are adopted for use, is to prepare a statement of the objectives for which one is striving. The survey may be made of the whole farm business or of a particular section of the business or of a particular practice. The accounting method analyses in detail the whole or part of the organisation or any individual farm with a view to economising materials and efforts and increasing the returns, while the survey method examines a large number of cases of similar type in order to isolate certain features which seem to be associated with success or failure. The accounting method aims at getting more accurate and more detail data from actual record kept on a limited number of farms. The survey data, on the other hand, are in large part mere estimates hastily made by the farmer usually with the help of the economic recorder but collected from a large number of farms.

Accounting may be of personal service type when the economic recorder visits the farm at regular intervals and records the necessary
details for the farmer. At the close of the year the records are analysed and results prepared for the farmer. This is the most primitive type of collecting farm management data by accounting method and is resorted to when making a beginning in farm management investigations and when the farmers are not prepared or do not know how to fill in records. A more advanced method is that of co-operative recording where farmers co-operate in the work, fill in the forms supplied all the necessary details and send them to the investigating authorities at regular intervals. The records are then analysed for him and he is supplied with a statement of results and remarks on his year's work. Regular visits in such a plan are not found necessary and the farms are visited only a few times—usually two to four times or less according to circumstances of individual farms—in a year. This plan has been found very successful in England and the United States of America. The number of farmers who are prepared to co-operate depends on the kind of records they are required to keep, other conditions being favourable. The more simple the record to be kept, the more likely it is to get a greater number and thus get a better sample. The plan made a remarkable progress sometime ago in Illinois under the leadership of H.C.M. Case and over two thousand farmers were co-operating annually in keeping simple financial and production records. Another plan found rather popular in many of the Continental countries is the formation of book-keeping societies who employ their own farm accountants for keeping usual financial accounts for their members. The accounts are analysed in some central office and the farmers supplied with results of analysis at the end of the year.

Forms of accounts of any kind, either financial or cost, have got a great educational value. Especially when they are kept by the farmers themselves, as in co-operative recording, they may, in certain cases, lead to continuation of recording for its own value to the individual, or to the improvement of records previously kept, on realisation of the value of improvements. This is not absolutely limited to accounting. All recording of forces is of value when the record is given to the farmer, even possibly without analysis or with only simple analysis, because it brings conscious realisation and apprehension of facts only dimly apprehended before.

**Marketing**

Until very recently, marketing of agricultural products formed a very small part of agricultural activity in India. With the opening of the country for domestic and foreign trade during the last eighty years or so, commercialisation of agriculture has assumed great importance and the practice of raising special crops which the farmer exchanges for food, clothing and other material requirements in a market is gathering force year after year. The specialisation in production has made the question of marketing of vital importance to the farmer and it is now generally recog-
nised that his prosperity depends not only on an increase in the rate of his production but also on his capacity to dispose of his goods at an advantage. Again, this specialisation in raising commercial crops, which are exchanged for necessaries, has given rise to the other aspect of marketing, namely, the purchase of necessaries.

On account of diversity of production in agriculture, there cannot be one method of marketing for all products and hence there is no one clearly defined method which will enable one to understand the whole problem of agricultural marketing. Each product has its own problems and the method of marketing varies not only from commodity to commodity but also from one region to another for the same commodity. The marketing of each commodity has, therefore, to be studied separately and a whole series of investigations, on a commodity basis, is essential to understand the whole problem of agricultural marketing.

Though each product may have its own marketing characteristics, a rough classification of agricultural products may be possible in so far as the broad marketing features are concerned. Thus, for instance, relatively non-perishable products like cotton, wheat, jute, rice and oilseeds, represent a group which is more susceptible to "orderly marketing", characterised by a large season to season carry-over and for which there exists a complex system of national and international marketing for dealing with spot and futures transactions. There are besides other non-perishable products like small grains and millets for which the demand is entirely local, there is no international or any well organised futures market, but where the seasonal carry-over, the country-wide production, and the prosperity of the consuming areas are still important in determining the prices received by the farmer, perishable commodities like vegetables and fruits present a distinctly different problem and require more intensive study than the others. Here the seasonal carry-over is not important and the outstanding characteristic is perishability, price variability and seasonal variation in supply.

The objects of commodity marketing study are:—(a) description of the agencies and mechanisms through which the commodity passes from the producer to the consumer; and (b) the analysis of the factors which make up the supply of and demand for a given product, the measurement of their relationships and explanation.* The purpose of the first objective is to study the efficiency of the agencies and processes involved in the distribution of the commodity, while in the case of the second, the study of the factors affecting the commodity prices is the chief aim.

* Many commodity studies provide a description of geographical distribution of production but this may only be the case because no other such statement is obtainable. Where, however, there are differences in type or quality of one commodity from one locality to another, it may be necessary that marketing investigation should include some study of these primary conditions.
Marketing investigations cover a wide field—much wider than is ordinarily thought of—and the investigator who has had a thorough training in economic theory, especially the theories of value, statistical methods and a theoretical and practical knowledge of the conditions under which the production and sale of the commodity are carried on, is best equipped for the work. Indeed, it may not be practicable for one investigator to be an expert in the knowledge of all the important aspects of marketing and specialisation may be found necessary where it is desired to conduct investigations in great detail.

In the developmental stages of marketing study, description may receive the largest attention since information, descriptive of the structure and processes of marketing, forms the very foundation to suggest specific research problems. It is true that mere description, oftentimes, falls short of yielding the information or understanding which is required to improve a function or to remedy a situation, but preliminary descriptive surveys are the only means for pointing out the various aspects of marketing that require special study by themselves.

The description of market agencies and mechanisms may cover but a single area or may deal with the whole national or world-wide system. This part of study is concerned with describing the present organisation and evolving means for its improvement by examining the efficiency of the different channels of distribution and pointing out wastes and losses. The analytical part of the study consists of the quantitative study of prices, sources of supply, elasticity of supply and demand, areas of production and consumption and all forces that lie behind the determination of market price. The analytical knowledge may serve as a foundation for forecasting future prices and for supplying a rational basis for deciding on the most effective programmes of marketing and production.

Farmers not only sell but also purchase and this side of marketing must not be overlooked. In tracts where cash crops predominate, the prosperity of the farmers, in so far as marketing problem is concerned, depends not only on the efficiency of the organisation through which their products pass ultimately to the consumers, but also on the efficiency of the organisation through which they buy food,* clothing and materials for the farm and farm family.

The aim in studying marketing is not necessarily one of defence of existing things, nor of advocacy of other things; but either may be justified under certain conditions. Perfection in market systems depends on

* Under a system of commercial agriculture it is not the practice to treat family (living) expenditure under agricultural economics. This may be treated under rural sociology, or under consumption economics. But under a peasant system, the expenditure of the family for living may be, and often is, the greatest part of purchases. Where the organisation supplying farm requirements also supplies household requirements it may be desirable to treat both under purchase of requirements.
the attainment of the best possible relations between the functions and agencies and on the development of adequate market information.† During the course of an investigation, the investigator may come across examples of too many middlemen, unfair transactions, manipulation, speculation, improper grading, inadequate transport and storage facilities, but it may be pointed out that each of these may require a special investigation before reliable judgments could be formed. Another point is that the whole marketing machinery is a product of evolution and any improvement must continue to come through gradual improvement of the method and procedure by development of public information and opinion. The first essential is the continuity of all the necessary processes of marketing, for any dislocation of organisation must lead to undesirable if not disastrous results.

Social Economics of Agriculture

The social economics of agriculture may be taken to include that part of agricultural economics which deals with the effect of economic and social conditions in agriculture on the economic welfare of the society or nation. *Vice versa* it also deals with the influence of economic conditions in the nation or society on the economic welfare of the agricultural community. The agricultural systems and returns from farming—financial or otherwise—are conditioned not only by causes arising within the industry itself, but by all kinds of external, social and economic causes. All laws and institutions which affect conditions in farming must, therefore, be taken into account in the consideration of farm management problems. Farming conditions also affect the social life of the nation and since we are all interested in the establishment of sound social conditions, we must study the relations between the farm and society. Farm management has, therefore, a social as well as a private aspect. It may be stated in brief that the whole object of studying social economics of agriculture is to synthesise the economic material toward some definite national end. With this object in view, all available material and economic facts must be brought together and examined in the light of present and prospective conditions. Such an analysis will give us an idea of the order and direction of agricultural production as well as of the extent of the efficiency in the utilisation of national resources.

Rural social problems are extremely complex and before they can be studied in a discriminating manner, we must first analyse them to determine

† Some of the tests by which marketing organisations may be judged are:
(1) Degree of physical wastage of commodity.
(2) Provision of information on supplies, movements of supplies and prices.
(3) Cost.
(4) Service for the maintenance of increase of demand. Under the last, service in storage, grading, packing, selection of supplies for given markets, are becoming important. But cost is not by any means the sole test.
the parts that comprise them. Each of these parts will then require an intensive study possibly at the hands of specialists. Indeed no one science can deal with total reality of the rural conditions of working and living. A general and brief outline of the social economics of agriculture will include the following:—

(1) Consumption Economics.

(2) Geographical studies.

(3) Economic Institutions and Laws,
   (i) Agricultural Credit and Rural Indebtedness.
   (ii) Land Economics, including land settlement, development and utilisation, land values, land tenures and tenancies, and public land policy with reference to taxation and security of land tenure.
   (iii) Transportation and Traffic—traffic routes and rates and their influence on regional development.
   (iv) National Agricultural Policy,
       (a) Protection;
       (b) Agricultural education.
       (c) Development and propaganda.

A few more items, not less important, may be added to the list indicating the scope of the social economics of agriculture but the wide range of the study is obvious. Studies may be of the existing conditions or they may be historical, tracing evolution, development and shifts. Historical studies are important in that they tell us how the present organisations have arisen and how changes have taken place. They may probably check the tendency of carrying thought far ahead of actual conditions.

For a large part of his data and information on most of the above subjects, the investigator has to depend on secondary sources like documents, state publications, census reports, departmental reports, gazetteers, trade reports, reports of commissions and committees and works of individuals. But these sources may not supply information in details enough for the practical solution of a particular problem or a specific situation and the teacher will then be required to collect firsthand data and information locally. Thus, for example, little detailed information on the economics of consumption is obtainable from any of these sources excepting of course the production and census reports which are found useful for a broad and general understanding of the consumption situation. There seem to be three possible methods by which the teacher may be able to secure additional or primary data and information and these are: (1) the survey method, (2) the case method, and (3) the accounting method. In order to get a more adequate perception of the conditions of farm life and farm work
at a specific situation, it is obvious that we must, in some way, break up the social complex into some uniform or homogeneous parts before any one or more of these methods can be used. The methods of defining typical areas, representative cases and sampling require to be fully considered, but it may here be stated, in general, that any area is characterised by the number and composition of the population that occupies it, by the conditions under which they live and work and by the habits, customs and behaviour which they generally exhibit. The limitations of the accounting method are wellknown and in the study of the social economics of agriculture, it has a limited application, being found useful in collecting data on a few projects like the standard of living studies under consumption economics. The case method aims at closely studying typical persons, groups, institutions, areas or situations and using the results obtained for understanding the whole complex. It is rather a method of intensive observation. The survey method is an extensive method and it is best adapted when the object is to observe on a large scale and attend to each individual case only to see whether it does or does not manifest certain common attributes. This method is by far the largest in use in conducting primary research in rural sociology, consumption economics and agricultural credit and indebtedness. The case and survey methods are not quite independent but rather complementary. One is synthetic, the other is analytic. Accounting has its use in both these methods.

TEACHING AND RESEARCH IN AGRICULTURAL ECONOMICS IN THE COLLEGES AND UNIVERSITIES OF INDIA *

by

PROF. K. C. RAMAKRISHNAN

1. Arts Colleges and Universities

Agricultural Economics as a subject of teaching and examination is a comparatively recent introduction in the Arts Colleges and Universities of India. Introduced about 25 years ago it has been gradually included among the compulsory subjects in the B.A. pass course in Economics by one University after another. The syllabus usually includes some aspects of agricultural co-operation, production and marketing of crops, livestock products, land revenue, and land tenures. In some of the Universities these are rele-

* This note is based on the information supplied to us by some of our Universities and Research Institutes. It was prepared by Prof. Ramakrishnan at our request.
gated to a half paper, the rest being devoted to public finance, etc. Students thus acquire but a fragmentary knowledge of certain parts of the subject of agricultural economics in the B.A. Course.

Agricultural economics has been prescribed as one of the optional subjects for the M.A. or the B.A. Hons. course by almost all the Indian Universities. But it was not every Honours College that provided for teaching the subject. For instance in Madras, an essentially agricultural province, no Honours College provided for it for about 12 years together. On the other hand, it has received special attention in some of the North Indian Universities, where the candidates for the M.A. Degree have been actually encouraged to take up investigation of rural economic conditions on the basis of a Questionnaire. The South Indian Universities have also provided for the award of the M.A. or M.Litt. Degree for thesis or investigation work. But a problem or survey of rural economic conditions has only occasionally been chosen; the more common choices have been on questions of finance, tariffs and industrial problems, on which more data are available in Government publications and most of the work can be done in the library.

Teachers of Economics in Arts Colleges have almost all of them a good grounding in economic theory, banking, currency and public finance on which good text books are available. Those who have taken up the teaching of agricultural economics for love of the subject or by force of circumstances have been handicapped by (i) a lack of good text-books and data relating to Indian conditions, (ii) lack of time to specialise in the subject as they have to teach a number of other subjects too and have lecturing work for 10 to 15 hours in the week, and (iii) they are given little opportunity to study first-hand economic conditions outside their locality.

Teachers in the Departments of Economics of Indian Universities that undertake post-graduate work are somewhat more favourably placed in respect of time available for study, though not in the matter of facilities for travel. In almost all the Universities there is at least one member of the staff who specialises in rural economics. In some like Bombay and Lucknow more than one work on the subject. Some of them have published books, and almost all of them have contributed papers to Economic Conferences (General and Agricultural) and to Economic Journals. They have guided a number of research students doing thesis for the M.A., M.Litt., Ph.D., etc. Not all the theses are published. Not all of them may be of high quality. But the amount of spade work done by way of collecting and presenting primary data is not negligible.

The University Departments of Economics have been generally, not always exclusively, interesting themselves in socio-economic enquiries such as standard of living and family budgets, population density, rural indebtedness, agricultural prices, marketing of produce, taxation of land and tenures.
Sometimes they indulge in disquisitions on the technique of agriculture, soil erosion, afforestation, irrigation, etc., which are better left to experts in these lines—limiting themselves to their economic bearings. On the other hand, comparatively little work has been done on problems of agricultural labour, on the economic incidence of different systems of leases, on the scope for mechanisation of agriculture and for large-scale farming on individual, co-operative or joint-stock lines. The Indian Society of Agricultural Economics invited contributions on these problems, but the response was feeble.

2. Viswabharathi

The Institute of Rural Reconstruction at Sriniketan, which is a part of the Viswabharati University founded by the poet Rabindranath Tagore in West Bengal, is a unique institution doing research and extension work in rural reconstruction for over twenty-five years now—initiated by the famous L. K. Elmhirst, the organizer of the International Agricultural Economic Conference. Practically no teaching is done in rural economics. Several village surveys of a socio-economic character were first done by the staff of the Village Welfare Department. More scientific enquiries employing modern statistical methodology, linked with the Statistical Laboratory at Calcutta, have been attempted later on, following usually the unistage method and avoiding the multistage method. Investigators are chosen from among the literate in rural areas and given a good training before employment. They are sent to villages selected at random, where all families are enquired into according to a set questionnaire and answers filled up. It has been found that the scope for intricate statistical method is restricted as "the basic material is not reasonably free from errors." The village people are said to be still suspicious inspite of years of extension work, and all the methods of crossing and checking employed are not enough to render the data absolutely reliable. The Economics Research Department which has an Economist and a number of Assistants conducts surveys with a view to helping the Rural Reconstruction Centre in the formulation of plans, the progress of work and assessment of its results. The aim is not merely light-giving but fruit-bearing. It has been doing cost of production surveys and has recently launched on the study of problems of land-tenure and the dynamics of population. With some increase in the guiding staff, it might well take up post-graduate students working for the Master's or Doctor's degree in economics.

3. Agricultural Colleges

With the exception of 4 or 5, all the Universities in India have each an Agricultural College affiliated to them; the Agra University has the distinction of having three Agricultural Colleges affiliated to it. When the Royal Commission on Agriculture reported, the Agricultural Colleges in
India with the exception of Poona and Lyallpur had made little provision for the teaching of agricultural economics as part of the course for the agricultural degree—B.Ag., or B.Sc. (Ag.). Even at Coimbatore Agricultural College affiliated to the Madras University, one of the earliest agricultural Colleges in India, a few lectures on land tenure, taxation and co-operation used to be delivered by lecturers in agriculture, along with farm-management in the final year class and only 2 or 3 questions were set in the examination for the degree. It is only in the last three years that a separate paper has been set on Economics including elements of economic theory and agricultural economics; and five years ago a separate Lecturer in Agricultural Economics, assisted by two graduates in Economics, has been added to the staff of the College—just enough to cope with teaching work. The Andhra University to which the new Agricultural College at Bapatla is affiliated has only one paper on Farm Management and Economics combined. Recently the paper on economics both at Coimbatore and at Bapatla has had added to it 'propaganda', on which some lectures are delivered by the local Deputy Director of Agriculture, an administrative officer. However necessary and desirable the subject of propaganda may be to Agricultural Demonstrators and others chosen for field work, in our opinion, it does weaken the paper on economics, for which only 50 to 60 hours are available for teaching in the final year.

One happy feature of the curriculum in Coimbatore and some other agricultural colleges is the importance attached to practical work by students in economics, as well as in other subjects. During term time students are taken out to villages in the neighbourhood of the Colleges and trained in the work of investigation of economic conditions—in the study of cost of cultivation of a variety of crops, of family budgets of different classes of agriculturists, of labour supply and demand for different crops and in different seasons. They are taken out to observe the conduct of weekly fairs, and to study the working of different types and grades of co-operative societies in the neighbourhood. Such observations and enquiries are also made when students are taken out on longer tours in the Province. Above all, every student in the final year class is expected to make a survey of rural economic conditions of his own village according to a set questionnaire, during the holidays when they go home. For the few who come from towns, problems such as the supply of milk and vegetables, and trade in other agricultural produce are set and special questionnaires are issued. Those who come from areas near plantations are asked to work on conditions of labour therein. This practical work has been systematically done at Coimbatore and Bapatla only in the last two years; it is yet too early to pronounce a decisive opinion on the quality of the work done. Many of the surveys are not of a high level; but a few are quite promising and deserve publication with some amplification and editing. At any rate the training in the work of
investigation is of high value to those who as Agricultural Demonstrators
or Inspectors later on will be called upon to make some economic enquiries
and furnish data to Government.

The teaching of such economics as found a place in the curriculum of
agricultural colleges was for long entrusted to officers who were trained in
agricultural sciences and not in economics and they were often shifted from
and to administrative jobs. The teaching of the subject was naturally frag-
mentary and empirical. On the other hand the number of economists who
have intimate experience of agricultural operations and rural life, if not a
sound knowledge of agricultural science, is very limited. Even if such
economists find a place on the staff of agricultural colleges, the assistance
given to them for conducting enquiries and making researches must be am-
ple and not just sufficient to correct records of observations made and
exercises done by nearly 100 students.

In Poona and Lyallpur Agricultural Colleges the importance of eco-
nomic enquiries and research was realised earlier than elsewhere and the staff
of those colleges have to their credit a larger number of publications on
economic aspects of agriculture including livestock.

Provision has been made in some of the Universities for graduates in
agriculture—B.Ag. or B.Sc. (Ag.)—to take M.Sc. (Ag.) by thesis in agricul-
tural economics as well as in subjects like agricultural chemistry, botany,
etc. But only a few have chosen Agricultural Economics for M.Sc. (Ag.).
In fact in the last five years research students have been far too few on
account of the offer of ready employment for nearly all who pass out as
B.Sc. (Ag.)—thanks to the needs for the Grow More Food Campaign.

Though the record of research work in Agricultural Colleges on agri-
cultural economics is poor, there is no doubt that there is great scope for
good work there on certain aspects of the subject—especially on costs of
production of crops and livestock products, farm costs and profits on differ-
et sizes of holdings, labour requirements of crops, efficiency of labour, pre-
vailing systems of wage payment, causes of the gap between the precepts
of the Agricultural Department and the practices of agriculturists. We have
occasionally papers contributed to agricultural journals on the basis of De-
partmental data on some of these problems, but not yet any systematic
treatise. This can be brought out best by a team of economists who have
a close acquaintance with agriculturists and those who have a sound know-
ledge of agricultural science.
TEACHING OF AGRICULTURAL ECONOMICS IN THE
AGRICULTURAL COLLEGE OF THE OSMANIA
UNIVERSITY

by

DR. HASHIM AMIR ALI,
Principal, Agricultural College, Osmania University

The contents of this brief note cannot be better prefaced than by the following very recent news-item:

Lapstone (N. S. Wales)
December 3, 1948.

Several of the new independent nations of Asia criticised a U.N. Food and Agricultural organisation report commending mechanization of agriculture, at today's sitting of the Economic Commission for Asia and the Far East.

The Philippine delegate said "Mechanised methods of production are not the answer to our problem. We have seen the effects of over-production of coffee in South America and sugar throughout the world."

Mr. F. W. Bulcock (Australia) said that, before agricultural mechanization was introduced into the Far East, sociological and psychological factors should be carefully considered.

The British delegate Mr. P. J. H. Stent, said that as a Westerner with considerable experience in the Orient he thought the Commission must take special note of important sociological factors, the pattern of land tenure, the social customs of the people and their traditional methods of agriculture as factors affecting the introduction of Western methods.

While the importance of the sociological background of agriculture is being emphasized in the open today, it has been realized for a long time by those who have given serious thought and study to agricultural problems. As early as 1908, or thereabouts, the United States had appointed a Commission to investigate the problems of rural life, and the report of this Commission, extending into several volumes, and showing in many ways how agriculture involves social as much as biological approach, is still regarded in America as a classic work on the subject.
Twenty years later i.e. in 1928, appeared the report of the Royal Agricultural Commission in India, and even here, contrary to expectations, the Commission drew the attention of Government to such intangible and psychological hindrances to agricultural development as are not generally realized by experts in the more technical aspects of farming.

The several agricultural colleges scattered over India could not, however, respond easily to this relatively new call chiefly because their system of teaching was more or less set already and each had already given relatively more emphasis to one or another of the technical sciences underlying agriculture.

The Osmania University Agricultural College, started only two years ago, had this advantage; it was not encumbered with traditions and could break new ground. Both of the senior-most members of its staff had had practical experience of rural development as well as a background of the social as well as agricultural sciences. The result has been that while on an average about 100 periods are given to agricultural economics in other Agricultural Colleges, the Osmania University Agricultural College devotes not less than 300 periods to the socio-economic background of agriculture during the first and third years of its three year course.

II

In order to give a more comprehensive idea of how the teaching of the subjects along with others is organized with a view to effectiveness, another feature of the syllabus of this particular College, as distinct from those of other Colleges and Universities, also needs to be clarified. Most syllabuses of Indian Universities are built up on an annual basis and give the details of the subject-matter required to be mastered for a particular examination paper. Contrary to this the syllabus of the Osmania University Agricultural College divides up each subject in such a manner that a sub-heading is allotted to each one of the three terms in the year and must be finished within that period.

In other words, the syllabus adopted here is more akin to that followed in American and British Universities where a course extending over a single term is a complete unit by itself and a student is required only to complete successfully a specified number of courses with a certain amount of option for sequence. This American system could not be adopted in toto owing to the need of conforming to the system of annual examinations so prominent in Indian Universities and the system which has been adopted has turned out to be a happy compromise.

III

According to the above system, the teaching of agricultural economics and sociology in the Osmania University Agricultural College is divided
into the following courses, there being two parallel courses running in each of the three terms of the I and III years.

<table>
<thead>
<tr>
<th>I year-1st term</th>
<th>1. Introduction to Economics</th>
<th>3 periods per week</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2. Book Keeping</td>
<td>2</td>
</tr>
<tr>
<td>2nd</td>
<td>1. Principles of Economics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2. Background of Sociology</td>
<td>2</td>
</tr>
<tr>
<td>3rd</td>
<td>1. Principles of Sociology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2. Methods of Statistical Compilation</td>
<td>2</td>
</tr>
<tr>
<td>III year-1st</td>
<td>1. Agricultural Economics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2. Rural Industries</td>
<td>2</td>
</tr>
<tr>
<td>2nd</td>
<td>1. Rural Sociology and the Indian Village</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2. Marketing of Agricultural Produce</td>
<td>2</td>
</tr>
<tr>
<td>3rd</td>
<td>1. Rural Education and Developement</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2. Village Survey</td>
<td>2</td>
</tr>
</tbody>
</table>

These titles of the twelve courses will give but a vague idea of the approach underlying the programme. Attention is therefore to be drawn to the actual syllabus, given in appendix to this article, which will give a more adequate idea of the nature and contents of each course. The underlying principle is to train the student for dealing with even the technical problems of science and agriculture ultimately from the point of view of human society. The first year provides the general groundwork while in the third year, the applications of these principles are dealt-with. In both, distinct but converging approaches are followed: One the economic-statistical and the other the psycho-sociological. Together they are meant to qualify the agricultural graduate for dealing more effectively with the development of rural life.

### IV

The details as given in the syllabus are sufficient to indicate to the students and others the field covered; but, in order to see that the students are actually taught all the details of each course, in the 60 working days constituting each term lists of thirty and twenty lectures are maintained by the staff members concerned for the courses having three and two lectures per week respectively. A careful record is kept of the progress made along this well-mapped out course and every now and then the Principal and the staff-member concerned sit together and see how, by telescoping or expanding, the prescribed course could be advantageously covered within the prescribed period.
There is one other aspect of teaching agricultural economics in this College which might be of interest, and that pertains to the principle on which the College Farm, for practical work and experience, has been laid out.

With all due respect to our old teachers and young colleagues, it must be conceded in the interest of frankness and truth that Agricultural College Farms, worked partly on demonstration and partly on research basis, are hardly the places where students could be expected to learn the economics of farming. The farm which they see, has itself an artificial basis and, having experience mostly of such farms, students can hardly be expected to be realistic in their approach to farming when they leave the greenhouse of University life and enter the fenceless fields of the Indian village.

In order to avoid this and to provide a more natural field for experience, all but 7 acres of our College Farm are cultivated on a share system and on a purely profit and loss basis. The seven acres cultivated by permanent labour provide (a) practice to the first year students to learn ploughing, sowing and other field operations, (b) museum plots where a large number of varieties are sown for purposes of familiarizing the students with different crops and (c) a portion for vegetable gardening on a family requirement basis. And it is made clear to the students that these seven acres are not cultivated on an economic basis.

On the rest of the land, peasants from the surrounding villages grow crops on a share basis partly according to their own choice and partly in consultation with the College authorities. The senior students are expected to keep a keen watch on the attitude, the practices, the faults and the shrewdness of the cultivators. They are to keep records of cost accounting and to see how far the cultivator actually makes profit or loses in farming.

It is admitted that, this being the first year of the College Farm, this system has not quite crystallized as yet. But these are the principles which are being gradually put into practice and it is confidently hoped that by the time the College comes of age, the system of teaching agriculture here will be, as good, if not better than anywhere else in India. And in view of the trend of thought inculcated in the news-item quoted in the beginning, our emphasis on the socio-economic approach to the study and teaching of agriculture might make this the most effective institution of its kind in the India of tomorrow.
APPENDIX

SYLLABUS IN RURAL ECONOMICS & SOCIOLOGY
FIRST YEAR


Books prescribed:—


Books prescribed:—
1. Sodhi: Elements of Book Keeping.


Books prescribed:—


Books prescribed:—

Books prescribed:—


Books prescribed:—
1. King: The Elements of Statistical Method.

THIRD YEAR


Books prescribed:—
2. Narayanswamy: Indian Agricultural Economics.
3. Tarlok Singh: Poverty and Social Change.

312. Rural Industries: Economics of cottage Industries of Weaving, Blanket-making, Flour milling, Roasting and Flanking, Starch and gum making, oil milling, Gur and Sugar manufacture, Tanning and leather manufacture.

Books prescribed:—
1. Nanavati & Anjaria: The Indian Rural Problem.
2. Brayne: Better Villages.


Books prescribed:—
1. Mukherjee: Agricultural Marketing in India.


Books prescribed:—
1. Fleming: Schools with a message in India.
2. Mason Olcott: Village Schools in India.
3. Van Doren: Fourteen Experiments in Rural Education.

332. Village Surveys: Economic Surveys carried out in various Provinces and States: Punjab, Bengal, Madras, Bombay, Hyderabad and Mysore.

SCOPE AND METHOD OF TEACHING AND RESEARCH IN AGRICULTURAL ECONOMICS IN INDIA

By

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Government Agricultural College, Kanpur.

When other countries have far advanced in the study of agricultural economics, its teaching and research alike have remained neglected in
India. If last three decades have led into the mighty height comparable to that of any other branch of agricultural science in the regions of the West, we are not yet clear even of its meaning and scope. The work of Indian Society of Agricultural Economics is praiseworthy in that in its short span it has tried to bring home the term 'Agricultural Economics.' Yet much remains to be done.

Causes of Neglect

1. Lack of Appreciation of its Specialised Nature.—A perusal of the policy so far followed with regard to education and research in this branch of the agricultural science would show that it has not been treated as a subject by itself requiring special education, training or experience to work in it. Consequently the different divisions of the subject, e.g., agricultural statistics, production, cost accounting, credit, marketing, consumption and social and legal changes affecting farming, etc., have been treated by different bodies and workers separately in altogether different fields casually as a side study and not in a coherent manner as branches of a single subject. Under the circumstances it was but natural that the workers specialised in other sciences e.g., analytical statistics (mathematics statistics), agronomy, agricultural botany, and economics etc. depending on their own initiative, in most of the cases, studied only certain economic aspects of agriculture in connection with their own work. Neither the study of the subject has, therefore, been on systematic lines with requisite thoroughness nor have the analysis and observations been always very precise and accurate. Unfortunately the drawback is still continuing and even today studies requiring good knowledge of this subject are carried out by mathematical statisticians, economists, or scientists in general, many of whom have neither any education nor any professional experience of the subject nor any background in agriculture. A mere physicist cannot function efficiently as an electrician, a mathematician as an engineer and a biologist as a doctor. Similarly a mere economist or a statistician cannot act as an efficient agricultural economist, however eminent he may be in his own field of work, barring, of course, a few exceptions. The ideal agricultural economist would be a farmer economist or an economist farmer. Unless we develop such workers in it, a proper approach to the subject will remain lacking both in education and research. Another fact to which attention need be drawn is that on account of very hazy ideas of its meaning and scope and in the absence of any specialized staff for the purpose, all its problems generally termed as agricultural statistics are entrusted to the statisticians. The statistician is often a mathematician with training in statistical analysis and can only, with few exceptions, do justice to problems which rightly belong to the domain of agricultural economists. It is, therefore, necessary to demarcate clearly
TEACHING & RESEARCH IN AGRICULTURAL ECONOMICS

the agricultural statistics problems into two parts: (i) analytical statistics and (ii) economic statistics.

It is far from any intention to slight the work done so far. The past work, in many instances, is of outstanding merit and posterity of agricultural economists will ever owe a great debt to workers who laid the foundations of this subject in India, irrespective of the field from which they were drawn; yet none can deny that the subject has now reached a stage of development where, in the interest of efficiency in work, it is necessary to recognise its specialised nature, develop a band of trained workers and treat it as a subject by itself. The times are hard pressing for a change in the outlook in this respect. It may also be added that the phrase 'education in the subject' has been used in the broadest sense including self-study and does not merely confine itself to an institutional degree or diploma in 'Agricultural Economics.'

2. Absence of a separate section for research and education in Agricultural Economics under the Departments of Agriculture and in the Agricultural Colleges:—Whereas there are separate sections with trained staff for all other agricultural sciences both for education and research, no corresponding sections for agricultural economics are in existence. The proper expansion of teaching and research activities in this subject had, therefore, not been possible. In most of the Provincial Government Agricultural Colleges, the subject is taught under Agriculture by junior staff and represented in the University and other bodies by the Professors of Agriculture who are ordinarily concerned with its teaching. But there are full-fledged sections with senior staff for teaching other subjects, e.g., agricultural botany, agricultural chemistry, entomology, etc. Recently a Directorate of Economics and Statistics has been established under the Ministry of Agriculture at the Centre. It is not clear why it has not been considered necessary to name it as the Directorate of Agricultural Economics. The Central Government decided to open a division of agricultural economics at the Indian Agricultural Research Institute, New Delhi, a few years back but no progress has so far been made in giving effect to it although its able Director Dr. J. N. Mukerjee himself remarks, in the Interim Scientific Man Power Committee Report of the Government of India, (1947) “There is also a prior need for the study and development of Agricultural Economics ……… which are very neglected subjects at present.”

3. Difficulties in obtaining data:—Like other natural sciences it cannot be studied within the four walls of a laboratory. The two essential equipments for its study are: (i) Farms belonging to educational institutions, and (ii) Farmers and their holdings. As all the universities and colleges are situated in cities, land for farms is a limiting factor and the facilities of agricultural farms are non-extant.
The Departments of Agriculture in the province run several farms and much useful data is available in their farm records, but an attempt has so far been made for their study from this point of view. A beginning in this direction has been made by the writer in U. P. with the help of two Research Scholarships granted by the U. P. Scientific Research Committee. It is, however, necessary to point out that the existing method of keeping farm accounts needs to be considerably improved, made uniform and modified with a view to give information on several aspects of farm management. The study of farmers and their farm holdings requires regular visits to the villages and stay therein. Great variations in data from holding together with inadequate means of communication, unattractive village life, difficulties in getting boarding and lodging of the type the worker is accustomed to by virtue of his environments and education, a wide gap in living and outlook of the two standing in the way of their free mixing, illiteracy and suspicious attitude of the villager towards officials or such research workers as a result of foreign domination and the feeling that none of them is their well wisher, make it a very hard and unpleasant job to venture study on many direct problems of agricultural economics. Therefore, the studies by the professors and research workers in the universities or by committees and commissions appointed from time to time mostly relate to the general aspects coming under the title 'Rural Economics' or touch superficially the problems of agricultural economy. The researches in farm cost accounts and economic problems of farm management have almost been negligible so far. The Central and provincial governments occasionally launch temporary schemes for such studies. But the method of collecting data on the cost of production through temporary schemes extending to 15 months or 3 years hardly succeeds in bringing out accurate facts. Great skill and devotion are needed in obtaining information from the farmers who are always suspicious of Government intentions. A worker with the certainty of his services being terminated at the end of the enquiry can hardly be expected to put required effort and heart in the work. The less said about his skill the better it is. Moreover, long term studies alone can help in arriving at proper conclusions as the production of a crop is only a part of its cycle extending over a number of years and crop cycles themselves are interdependent on each other with respect to yields and soil fertility which ultimately influence the profits.

4. Small Holdings—It can safely be assumed that 60 to 70 per cent. of the holdings are less than 3 acres in the country. Such a small unit of land area per family forces the agriculturist to adopt subsistence pattern of farming, making it inelastic to such an extent that he has to follow the same routine of cropping scheme and cultivation practices year after year irrespective of scientific requirements. There is no proper organisation of cheap and controlled agricultural credit to help him. A rise or fall in
agricultural prices does not matter much to him as he has no surplus to sell. He is, therefore, not much interested in agricultural economics researches based on a system of commercial farming. His problems are entirely different and need investigation with a view to raise his standard of living from the same limited bit of land.

Need for Study and Research

With ever increasing shortage of food and the dire need of self-preservation, the problem of agricultural rehabilitation and increased production is foremost in every mind. The State and the Legislators have the most liberal attitude in sanctioning funds for schemes being submitted by the scientists and others claiming to add to the existing production. But in order to provide guidance as to what the problem is and to test the solutions suggested by them a proper research organisation in agricultural economics is essential. E. C. Weitzel remarks, “In terms of farm operations and management it is important that privately-financed measures return a net benefit and that public investments are made to the greatest advantage from the standpoint of social-welfare. Legislators need guides relative to the wisdom of voting appropriation, administrators need valid justification for their activities, creditors need loan justification and farmers and tax-payers want to know whether the recommended measures pay or not.”

A number of persons and recently all the committees and conferences which were organised by the Central and Provincial Governments in connection with food situation and agricultural development have felt difficulty in making precise recommendations in the absence of data relating to the agricultural economy. As the latest one amongst them i.e., the U.P. Zamindari Abolition Committee Report published in October, 1948 points out, “A holding to be economic must provide a surplus on the ascertained costs of production sufficient to provide security for lean years and for fluctuations in market prices and a fair standard of living for the cultivator and his dependents and fair wages to agricultural labourers. In the absence of statistics regarding the gross produce on various sizes of farms in the different regions of the province, the cost of production and family budgets, it is impossible to say what area of land constitutes an economic holding from this point of view.” The Committee further observes, “Reliable and comprehensive statistics are absolutely necessary for the Government to watch carefully the effects of the revolutionary changes in agricultural economy consequent on the abolition of zamindari. If the Government is in possession of statistical machinery, it will be in a position to foresee likely trends of development and to anticipate difficulties.” Evidently the term “Statistical Machinery” used by them refers actually to an organisation for research in agricultural economics,
Today many agricultural legislations have been passed or are on the anvil. The most important of them all is that relating to the abolition of intermediary rights in land. There is a move for stabilisation of prices, guarantee of minimum prices, fixing of fair wages and fair rent, regulation of crops, land prices, measures like crop and cattle insurance and levy of agricultural income-tax etc. Their correct formulation and successful working are absolutely dependent on a proper study of their effects and modifications needed in the light of such studies which entirely belong to the domain of agricultural economics. The following remark of Prof. M. Ezekiel of U.S.A. is worth noting in this connection: "Had it not been for ten years of pioneering work in economic analysis in agriculture started by Dr. Taylor in the Bureau of Agricultural Economics, our Agricultural Adjustment Act might never have functioned effectively."

Over a hundred crores have been spent on 'Grow More Food' and many costly schemes are working or are being launched. A greater portion of this money could have been saved and better utilised, had we also had an organisation on the lines of Agricultural Economics Bureau of U.S.A. Following the maxim 'better late than never,' we must make a beginning at the earliest.

The Future Set Up

1. Each province should have a Bureau of Agricultural Economics, located, preferably, at the Provincial Government Agricultural College and properly staffed for research work in Agricultural Economics.

2. Like other subjects there should be a separate section of Agricultural Economics, Farm Management and Statistics at the Agricultural Colleges, which should, besides education, take up the functions of research in agricultural economics and combine with itself the Bureau of Agricultural Economics for the Province. The Governments can give a fillip to its better study by a sanction of handsome scholarships to post-graduate and research scholars of the subject. Our Society can also help the cause by awarding prizes and medals on the best work done in a year in any branch of agricultural economics. Wider propaganda can be created by the appearance of a regular monthly journal instead of a quarterly.

3. The provinces should be divided into agricultural regions and the Bureau should have its sub-divisions in each region at a suitable centre.

4. The sources of information to the main headquarters and sub-centres will be:
   (a) Direct investigations by its staff.
   (b) Reports by officials of various departments concerned.
   (c) Honorary reporters drawn from village panchayats, rural teachers, and village co-operatives.
(d) State farms and selected individual large farmers and small holders.

5. Its functions will be as follows:—*

(i) Collection of data relating to cost of production, prices, economics of different crop rotations, cropping schemes, varieties of crops, manures, different tillage practices, size of farms, cost of living etc.

(ii) Planning and conducting enquiries on any specific issue relating to farm management which may arise from time to time.

(iii) Laying down of policy for the guidance of various bodies which are concerned with the collection of data relating to farms or farmers e.g., census of human beings and live stock, acreage and production, indebtedness, etc.

(iv) Consolidation and interpretation of data lying in office records of different Government departments.

(v) Fixing of fair rents, periodical revision and calculation of percentages by which rent is to be reduced or increased from year to year on account of bad harvests or severe price fluctuations.

(vi) Fixation of land values.

(vii) Evaluation of effects of scientific researches and State measures on economic and social welfare of farmers.

(viii) Guidance and advice to farmers on matters with specific reference to their holdings e.g., type of agricultural enterprise, working capital, estimates of expenses and incomes, long and short term financial requirements, etc. Such information will not only help farmers but would also prove valuable to the credit organisations in determining loans to farmers, period of realization and rate of interest. It is very necessary that credit should play its proper role in developing agriculture and for that any organised and controlled credit agency would need such information so that the financial help may be well related to the farmers’ requirements and ability to pay out of the additional income resulting from its use.

(ix) Training of the farm Managers of the Government and private farms in cost accounting and functioning as advisory body to farmers on farm-costs and their analysis.

Proper functioning of such an organisation would much depend on the quality of personnel of which there is great dearth at present in the country.

It is, therefore, desirable to emphasize in the end the need for proper training in the subject, preferably in U.S.A., of suitable persons possessing already experience of education and research in Agricultural Economics in India. It may be pointed out that in the scheme of foreign scholarships adopted by the Central and Provincial governments the subject was either

* See also “Agrarian Reform and Agricultural Reconstruction,” G. D. Agrawal, p. 62.
conspicuous by its absence or very inadequately represented. It is necessary to grant liberal facilities to workers in this field for going abroad and coming in contact with the workers in those countries. Besides the existing facilities of training and education in Agricultural Colleges, the various Universities have also felt the need of imparting education in agricultural economics and necessary provisions are being made for the same. But there appears no uniformity in the courses being adopted by them. The Indian Society of Agricultural Economics will be doing a great service if it draws up a standard course for higher education in the subjects and circulates the same to the institutions concerned for their guidance.

SCOPE AND METHOD OF TEACHING AND RESEARCH IN AGRICULTURAL ECONOMICS IN INDIA

by

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Introduction: ‘Agricultural Economics’ has attained in many countries an equally significant place as compared to some other branches of economics dealing, as for example, with problems of business, trade and industry, public finance, labour etc. Teaching and research in agricultural economics have advanced to a high stage in countries of Europe and in the U.S.A. in particular during the last 30 or 40 years; and they have received exceptional attention from the governments, Universities and private bodies since the great depression (1929). Needless to confess that the progress made in India so far in this sphere is very little. Even at this stage, however, it is not too late to take stock of the situation, to explore the possibilities and to lay down plans for the rapid development in future. The topic before us may be divided into three parts, the first discussing questions of research, the second those of teaching and the third containing chief conclusions and recommendations.

Part 1

Definition and Scope of Agricultural Economics: ‘Agricultural Economics’ is that part of economics which deals with the problems arising out of man’s use of natural resources pertaining to agriculture. It deals not only with the study of the relation of man to the utilization of the agricultural resources strictly in the economic sense, but broadly speaking its scope extends to a wider field covering the study of all other inter-related aspects, technical, scientific, social, legal and geographical. But we have to distinguish
those aspects which relate to natural and technical side of agriculture as livestock and plant life, their breeding, improvement and diseases, soil science, processing of agricultural products, mechanisation and rural engineering from the other side which concerns itself chiefly with the economic and social aspects of agriculture. Nevertheless, it is necessary that an agricultural economist should equip himself with a general knowledge of all these subjects together with a good background in economics and economic theory generally. It is also useful to have some acquaintance with mathematics and economic statistics.

Agricultural economics, in countries where it is fully built up, has become so extensive a subject embodying as it is today numerous clearly discernable and yet united branches within its ambit. Remarkable work has been made in some of the following directions viz., (i) Land economics inclusive of research on land tenures, tenancy, colonisation and area development, and land values (ii) Farm management inclusive of studies on size of holding, fragmentation and subdivision and costs of production (iii) Agricultural marketing inclusive of research on prices and rural transport (iv) Agricultural co-operation (v) Agricultural finance inclusive of agricultural indebtedness (vi) Rural unemployment and cottage industries (vii) Agricultural labour (viii) Agricultural policy and (ix) Rural sociology inclusive of studies on family budgets and standard of living. The results of the intensive researches made in these several branches are borne at high levels to the practical farmer and to the administrator in formulating agricultural policy. It is obvious that to command a fundamental knowledge in all the above lines of agricultural economics and to acquire a working knowledge in other aspects of agriculture and in statistical methods applied to economics is in no way easy for a single individual. In the face of high degree of specialisation of the subject attained elsewhere, it is deplorable to find that not only specialisation is wanting in the subject but the ‘general economist’ is more often usurping the place of the ‘specialist’ in agricultural economics in India. Therefore, for a healthy growth of scientific research and teaching is agricultural economics—as a matter of that of any other subject under the sun—it is highly essential to recognise and safeguard the place of the ‘agricultural economist’ from the inroads of the ‘generalist.’

Progress of research in other countries:

Judged in terms of the number of institutions and the research publications made, of all the countries of the world, the U.S.A. undoubtedly occupies the foremost rank in the matter of both research and teaching. Apart from the departmental work of the U.S. Department of Agriculture, the chief

centres of research in the early stages of development are the State colleges of Minnesota, Wisconsin, Cornell and Illinois. The Bureau of Agricultural Economics is a veritable nucleus research centre which furnishes an up to date efficient service to the Government and the public on current affairs. Dr. H. C. Taylor (in happy collaboration with W. J. Spillman in the earlier periods), Prof. T. H. Carver, Prof. R. T. Ely and Dr. G. S. Wehrwin are some of the well known pioneers responsible for the rapid strides the subject has made in the New World. The beginnings of ‘Rural Sociology’ in the U. S. A. are associated with the name of Prof. C. J. Galpin of the Wisconsin University who published a series of monographs on the social problems of agriculture. Now almost all the States in the U.S.A. provide adequate funds for advancement of research and advisory services in agricultural economics. In England, too, considerable research and teaching have been done with the Research Institute of Agricultural Economics at Oxford as the pivot, since its establishment in 1913. On the continent of Europe, well organised advisory service useful to the farmers is provided by a number of farm-accounting associations and societies. With a few exceptions in the major part of Asia and Africa agricultural research as well as provision of current information may be said to be still in their embryonic stage. And India is no exception to it.

Methods of Research:

The two fundamental methods of research in economics are the Deductive and the Inductive, and the introduction of mathematical approach is a later feature. In so far as investigations in agricultural economics are concerned, there are at least three methods widely used viz., the ‘Accounting’ method, the ‘Survey’ method and the method of ‘Postal enquiry’ (or ‘mailed questionnaire’). (1) The first involves the practice of accountancy into farming business through introduction of book-keeping. The data will be obtained from the records of farm operations and business transactions of farms carefully maintained. In view of the details of accounts maintained, the ‘Accounting method’ may be subdivided into three varieties, as the ‘Full cost accounting’, ‘single enterprise accounting’ and the ‘financial accounting.’ The method of accounting is characteristic of intensive and more comprehensive studies of farm management and exercises and educational influence on the farming community. If the accounts are properly kept, the data obtained will be highly accurate and from a research viewpoint have a special value. The limitations of this method are obvious, firstly because it is costly to keep a system of records on an extensive scale which the farmers in a country like India can ill afford nor can understand. Further, the information collected reflects the conditions of the past years

2. See for a detailed discussion of these, ‘Methods of Research in Farm Economics’ by Arjan Singh vide Indian Journal of Economics, Vol. XX.
for which accounts are complete and, not the conditions actually prevailing at the time of investigation. (2) The survey method implies investigation into the conditions obtained in a particular village, area or region. When once the size of ‘the universe’ to be covered by the enquiry is decided, then arises the question of selection of villages in the ‘Universe of enquiry’ and later, on the selection of farms or farmers in the villages chosen. In some of the village surveys made in the past, the adoption of door to door investigation or of all farms in the village was not rare. But recently the statistical methods are increasingly applied. Some of the important ones are (a) the method of random sampling or lottery (b) selection of every 2nd, 3rd, 4th or some other ordinal according to arithmetic (may be some other) progression out of a full list of farms or villages prepared. (c) The method of stratified random sampling according to which the universe of investigation is divided into a number of strata or districts in the first instance in accordance with homogeneity of physical and agricultural conditions, and subsequently a selection is made out of each of these strata in proportion to the importance of each in the lines of (a) or (b). (d) The method of ‘stratified purposive selection’ which represents a combination of the use of stratification to secure homogeneous subgroups and of deliberate selection through the use of controls. In other words, it combines profitably the methods of stratified random selection and of purposive selection.\(^3\) The accuracy of the survey method no doubt depends not only on the schedules prepared for collection of information and the selection of samples but to a considerable extent on the tact and intelligence of the investigator himself while carrying on the field enquiry. This method admits of wider application in India. (3) Lastly the method of ‘Postal enquiry or ‘mailed questionnaire’ consists of simply gathering material by means of replies received to the Questionnaire (a printed or cyclostyled form containing a series of questions) from the farmers concerned without any personal visit of the investigator. The information may be gathered periodically also. This has been in vogue for collection of agricultural statistics or information of a very simple nature. As a matter of fact, at present in the case of the two previous methods (‘Accounting’ and ‘Survey’) the information gathered is supplemented by means of issuing questionnaires as well. While preparing a Questionnaire the points to be kept in mind are firstly, that the Questionnaire must be split up into a convenient number of forms or schedules in order to avoid repetition or simplification of matters; secondly, the questions put should be simple, clear and properly arranged without involving any calculations or much of thinking on the part of the farmers in answering the questions. The answers should consist largely of statements of facts as far

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as the farmer’s affairs are concerned or falling within his personal knowledge. Lastly, it is useful to start with a provisional questionnaire which has to be modified in the light of the experience gathered after a preliminary or pilot survey.

**Origin and research work done in India:**

In India, till recently, improvement in agriculture was looked at largely from a technical view point, with the result that the economic and social side of agrarian questions have been grossly neglected. No notable researches were made in the past. The major sources of information of agricultural situation are the government reports and the blue books like the Reports of the Famine Commission (1880) of Dr. J. A. Voelcker (1889), the Royal Commission’s report on agriculture (1928) and the various reports of the Provincial Banking Enquiry Committees (1931). We have reports also on marketing of agricultural products, on co-operation, land revenue assessment etc. Barring the departmental work done by the Government, only isolated attempts have been made by a few students or individuals in the Universities and other bodies to study some of the rural problems. No wonder, if some of such researches remain unpublished. Thus no adequate and reliable data, statistical or otherwise, exist at present useful either to the Administrator or the research worker. The Royal Commission on Agriculture have plainly stated that the problem which confronted them was so great that it was difficult for them to get down to essentials and they had neither the trained staff nor the organisation to carry into effect such recommendations as they were in a position to make. It cannot be confidently asserted that we are now much better off. A definite lead in creation of a separate section for purposes of teaching and promoting research in agricultural economics in the department of economics is given by the University of Bombay in 1945. Of late, separate departments or Bureaus of Research and Statistics are established both by the Central and by some of the Provincial Governments. Doubtless it should take them more time to see the establishment of separate bureaus for research in agricultural economics as well. Even though the establishment of the Indian Institute of Agriculture has become an accomplished fact, it is regrettable that no facilities are provided so far for teaching of agricultural economics. However humble may be our progress in the line of research, our chief interest now-onwards must be directed on the future rather than the past for an all-out switch-over to the development of a systematically planned and organised research activity on agrarian problems in the next five years. The foundation of the Indian Society of Agricultural Economics some time ago may be reckoned as a step forward in that direction.

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Part 2.

Teaching of agricultural economics:

When we turn to the field of teaching, our achievements are humbler still. Although a paper on 'Rural economics' or 'Agricultural economics' has to be studied for the B.A. and the M.A. courses in economics, as usual the subject is treated as one which needs no specialisation. The teaching of the subject of agricultural economics is more than most entrusted to the 'generalist'. In fact, an independent post for teaching of agricultural economics is found only in the Agricultural colleges or Institutes and very rarely, if not none, in the colleges or in the University departments. These facts are powerful enough to deter from making any further attempt here at discussion of the methods of teaching in India.

Part 3.

Summary and Recommendations:

The material presented above is sufficiently indicative to show that although the realm in agricultural economics is ever widening, both research and teaching of the subject have been hitherto subjected to gross neglect in India. The following recommendations may be made to promote their rapid advancement:—

(i) A chair or a separate section of agricultural economics, if possible, should be created in every one of the Universities for teaching as well as conducting researches on regional basis.

(ii) In all provinces, a Bureau of Research in Agricultural economics and agricultural statistics under the Ministry of Agriculture has to be set up. Similarly a Central Bureau may be founded under the aegis of the Central Government for co-ordination of the work and maintaining of an expert staff of a high calibre.

(iii) Periodical conferences of agricultural economists and the government officials dealing with the problems of agriculture may be encouraged. It is profitable, if a group of distinguished scholars and leaders of economic research from outside are also invited for such conferences for exchange of information and for getting benefited from their experience for improving, extending and utilising available data and knowledge in the best interests of society.

(iv) Ample opportunities are to be multiplied by way of scholarships, research grants, and grants for publication of the investigations made in the form of a series of well planned monographs in order to encourage research work in the subject. Both the Central and the Provincial governments have to make departure from their past indifference and ear-mark at least one
or two foreign scholarships every year for obtaining training in methods of research and teaching in the U.S.A. and the U.K. for some time to come. Essays may be invited on the current agrarian problems and prizes awarded to the best works every year by the Provincial Governments and/or the Universities.

(v) Agricultural economics must be made a compulsory paper in all the degree courses having economics or agriculture as the main subject. In those institutions where facilities exist for taking entire sociology for the M.A., a paper on 'Rural Sociology' may be included.

(vi) Lastly, it is deplorable that the profession of teaching or academic line generally is becoming increasingly unattractive and the more ambitious young man and woman are regularly fleeing away from it, sooner or later, because of its unremunerative character at present. If a high standard of research and teaching are aimed at, it is necessary to level up this disparity and to retain the ablest and the best men irrespective of financial or other local considerations.

In these ways, it is possible to expect that scientific research and practical agriculture reciprocally strengthen and fertilise each other at higher levels in a short time to the maximum social and academic advantage. It may be contended that most of our difficulties and economic or social problems can hardly be solved by merely stimulating research activity. It cannot be denied that there are equally potent factors other than research responsible for the progress and prosperity of mankind. "Nevertheless carefully planned and objectively conducted investigations have made and promise to make still larger contributions to mankind’s ability to conduct its affairs wisely." 5 The critical times through which our country is passing and those that lie ahead call for urgent increase of services of this type, because the danger of entrusting the welfare of the country to the haphazard decisions of policy-makers who usually base their judgment on a few outstanding facts in their minds, if not according to one's primitive instincts, is become too clear during the last World War II and its wake, especially after the fiasco of the Government policy of 'De-Control'. The imperative need for facts and fact-finders must be recognised forthwith and a well-organised system of economic research in relation to both social and public policy by individual as well as co-ordinated efforts of Universities, private bodies and the State be developed.

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SCOPE AND METHOD OF RESEARCH IN AGRICULTURAL ECONOMICS

by

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To determine the scope and method of research in agricultural economics the first difficulty that we have to face is to define the scope of agricultural economics itself. The common opinion seems to be that agricultural economics, in so far as it is a science, is applied science. Scope of research in an applied science, is very difficult to determine because an applied science gradually develops a body of theories of its own and threatens to become an independent sector on its own. This has happened to numerous sciences which originally could not claim to be autonomous sectors in scientific thought but are now accepted as such. In agricultural economics also we have arrived at a stage where it has to be given recognition as a sister science of comparatively less generality than theoretical economics but by no means a science derived from what is usually known as general economics. In economics there are various branches like international trade, industry, money and banking but nobody claims that these are anything else than special derivations of the same economic principles in different conditions. In the case of agricultural economics, however, we must admit that in certain respects it claims to be more than an applied science, and that it has already developed a large number of formulations which are on the same general plane as economics and unless this fact is consciously recognised further progress here is no longer possible.

This situation has arisen because of the fact that general principles of economics have always grown out of and oriented towards industry and trade. They have been developed under assumptions of commodity production for profit under competitive conditions by employing wage labour. Naturally, therefore these laws fail to explain or analyse the movements in the vast field of agricultural production as the initial premises on which its analytical tools are based prove to be partially true or even sometimes totally invalid in the field of agriculture.

General economics as we know it has failed to integrate the movements in the field of agricultural production and has necessitated the growth of agricultural economics due to a peculiarity inherent in the evolution of agri-

culture itself. Agricultural activity has always in its economic organisation adapted itself and accommodated two or more conflicting systems for an indefinitely long period. Modern agriculture for example never got fully released from the womb of feudalism though it developed a strong link and in many cases transformed itself partly to a capitalist basis. Its hybrid nature has persisted in different degrees in different countries starting from America where it combines highly developed capitalist forms with rank feudal forms and ending with the colonies where the feudal links are far stronger than the capitalist. Analytical tools of modern economics arisen from a study of industrial capitalist methods often fail to be a satisfactory theoretical basis for this more complicated form of activity where capitalist assumptions are never fully realised and sometimes are grossly inadequate.

Observations of some American economists in this respect are worth quoting.

"The above discussion, like most economic theory, has assumed primarily with reference to production for market by employing factors of production having a market valuation and by entrepreneurs motivated primarily by the objective of maximum net profit.

In spite of the fact that the peasant economies of Europe have gradually emerged from the regime of states and American rural economy has advanced beyond frontier habits and attitudes, agricultural competition continues to be influenced by certain peculiarities which do not conform closely to the pecuniary assumptions intrinsic in conventional theories."

A few examples may be given of this.

(1) Rent often fixed even in Europe by custom and not competition.

(2) The family as a whole, not the individual, is frequently the unit of competition in labour's valuation of itself. Much family labour fails to respond to the inducement of commercial wage rates because of the obvious economic, social and psychological advantages of a continuing family connection. In areas where agriculture is not predominantly commercial there is frequently the added influence of lack of outside alternatives.

These and many other similar considerations may be pointed out which to the general economist appear to be non-economic and untraceable.

"Such considerations emphasise the need for modified farm management techniques, methods of land valuation and classification for small farms, especially for areas characterised by a good deal of production for home use. In fact, some of the previous farm management conclusions with regard to most remunerative size of farms would probably be invalidated if the considerations mentioned were taken into account.

These considerations suggest also the possible desirability of modifications in the assumptions and conclusions of marginal theories and, moreover, help to explain such economic and social phenomena as the persistence of
apparently unprofitable types of farming; continued use of areas clearly sub-
marginal for a pecuniary economy, excessive rentals and land vaules,
as for instance rackrenting in Ireland and the resistance of village economy
to the intrusion of agricultural capitalism."

A clear realisation of this would have encouraged us to build a unified
theory of agricultural economics but this aspect of the problem has never
been clearly understood. Result is that analysing aspects which can be
tackled on capitalist assumptions we are fairly successful while in aspects
which are not strictly amenable to such treatments we degenerate into
simple descriptive informative stories and reports or mere fact finding. This
has reduced agricultural economics to a dabbler's science which may be
anything from a description of rural life, a social welfare scheme for a vil-
lage to a treatise on geography or soil condition. This will become clear
from a recounting of the chapters in one or two text books on Agricultural
Economics of India.

1. Introduction
2. Physical description and irrigation
3. Progress of social life in village
4. Sanitation
5. Education.
6. Livestock
7. Implements
8. Agricultural holdings
9. Description of crops
10. Cost of production
11. Income from the field
12. Agricultural labour
13. Tenants
14. Rural Industries
15. Trade and Transport
16. Indebtedness
17. Co-operative Movement
18. Land Revenue
19. Standard of living
20. Conclusion.

Obviously writing such informative books on different social and eco-
nomic aspects of rural life may be useful but they do not help in formulating
a unified theory nor encouraging original thinking. They are purely de-
scriptive, involve the development of no general principles, have little train-
ning value and the factual material presented may usually be found in the
library if, as and when the student needs it. It is a pity that in agricultural
economics it is this laborious compilation of already compiled data very
often masquerade as agricultural economics with the result that complete
chaos reigns as regards the development of and research into a unifying body of general principles.

Agricultural economics as a science can no longer develop unless more consciously analytical methods are employed, unless more precise statistical and mathematical models are built up on the basis of observed phenomena. In the last analysis, an exact approach in any science boils down to isolating certain factors we are interested in and studying the inter-relationship of these factors to the exclusion of other factors. Any analytical method is thus a method of studying by carefully isolating the object to be studied as far as possible from other interacting forces. This involves the difficulty of selecting factors or the variables which we think are within the system we want to study and isolating them from these variables which we think are external to the system.

Lack of clear realisation of the scope of agricultural economics necessarily leads to a confusion in selecting the proper variables in the system that are to be observed and in attaching due importance to the variables which are exogenous (external) or endogenous (internal) to the system. The economic statistician in trying to build his models has been constantly facing this problem and the following observations of Koopman in the journal of the American Statistical Association puts the points precisely. Needless to say that the problem is most emphatically the problem for any one who wants to apply analytical methods in agricultural economics.

"Statistical implications of complete system of equations:

*Complete system in economic theory.* In the theory of the static state economists have long been accustomed to think of economic quantities as determined by a system of equations, equal in number of quantities to be explained. In the theory of economic fluctuations it has taken a good deal longer for a similar point of view to be adopted. Fragmentary theories are still being presented and taught. Under the influence of Tinbergen and other writers, however, the idea that a complete system of relations is required for a determinate dynamic theory has gained increasing acceptance.

The sample is conditioned by a complete system of equations.

The meaning of Haavelmo's work is that economic statistics has now caught up with economic theory. It has now become clear that methods of statistical estimation, even of a single equation of economic behaviour, must in some way take account of the fact that the variables entering that equation are part of the wider set of relevant economic variables which are determined by a complete system of simultaneous equations.

This point is bound up with the fact that economic data are not controlled values selected for the purpose of an experiment. Economic variables are produced through the simultaneous action of a number of economic relations under the impact of disturbances and changing non-economic vari-
ables. The sample of data from which we attempt to measure any one particular relation is conditioned by the fact that the other relations restricted the movement of some or all of the same variables in the same period. Disregard of the existence of this other relation generally leads to biassed estimates. The conditions under which a sample is obtained have always received close attention from statisticians in interpreting the information gained from that sample. Application of that principle to economic statistics naturally leads to the requirements that statistical methods of fitting take into account the formation of economic variables through a complete system of equations.

Complete system methods

It seems that two main roads are open to further enquiry which may be labelled "complete system methods" and "incomplete system methods." Complete system methods require in principle that a complete system of equations, as defined below, is specified even if some part of it is not actually estimated in the usual sense.

Exogenous and endogenous variables

Economists have always regarded their system as complete if the number of equations equalled the number of endogenous variables. That is, a distinction was drawn between endogenous and exogenous variables, in the sense that exogenous variables (often identified with non-economic variables like, temperature, rainfall) influence the (economic) endogenous variables, but not vice versa. Accordingly, the equation system is constructed to explain only the endogenous variables, the exogenous variable appearing in the equations as given quantities. The question arises whether for purposes of statistical estimation of such a system of equations additional equation outside the system explaining the variables considered exogenous should be taken into account. Could be disregarded of purely physical relations between rainfall, temperature and other physical quantities, say, lead to bias in the estimation of economic relations? This question has been studied elsewhere and can be answered in the negative, although subject to certain qualifications which space does not permit stating here.

Thus in analytical economic studies, already, this problem of the exogenous and endogenous variables and proper evaluation of the exogenous variables is being constantly raised. This is because in economics the conditions of experimentation are not under control. They are being generated by society and unlike Physics, Chemistry and other exact sciences where the external conditions can be made as nearly constant as possible in the economic field the external variables will continually disturb the equation system. This is even more so in the realm of agricultural economics where the external variables do to an even greater extent affect the variables within the system because of the comparatively backward forms of production and
production relations prevalent in agriculture. This leads in agricultural economics to two types of reaction. In one case the variable to be studied is supposed to be completely determined by the exogenous variables and agricultural economics is supposed to be nothing more than an analysis of social conditions, climate and similar natural exogenous forces thus making the endogenous variables lose any independent movement altogether. In such cases, agricultural economics becomes more agronomy than economics.

The other reaction seems to be to give up analytical methods on the plea that conditions obtained in economics and in other fields cannot be applied to agricultural economics where conditions are entirely different and, therefore, instead of economic principles sociological narration or pen picture of village life is taken recourse into.

Both the methods eschew the scientific economists' outlook, one going into agronomy while the other just degenerates into sociology. If agricultural economics proceeds along either of these lines its future is dark indeed.

Immediate research therefore on a theoretical plane must first prepare an adequate background for the study of problems of agricultural economics. Proper evaluation must be made of the evolution of agriculture and the inadequacy of the economic laws assessed. Detailed formulation can proceed only after this theoretical clarification is achieved before which this senseless compiling which we call agricultural economics will continue. Moore in his economic demography of Europe has very nicely summed up the extremely complicated nature of the variable in agricultural economics.

"The productivity of the agricultural worker, or, the economic wellbeing of the agricultural family is a function of many variables, including climate, soil, agrarian technique, and so on. But the relation of the cultivator to the land is also a function of how the land and its products are distributed. An understanding of the property system is accordingly a fundamental prerequisite for an appreciation of the characteristic of agricultural production. Property and division of labour clearly are of cardinal importance in determining the actual organisation of agricultural production and distribution.

For example, the share of produce remaining to the cultivator is a result of proprietary claim to capital and services. If land is held privately and cultivated by a family group, the share of the product available for the cultivator is reduced only by taxation and charges for credit for which commensurate services must be received. A tenant on the other hand must give up a fixed amount or proportional part of the product to the landlord.

The technological and economic organisation of agriculture is likewise continually related to the distribution of rights to the soil. Thus the size of the productive unit under unified control partly determines the amount of capital that can be productively used and for technological improvement.
In some cases, even if owners of small plots could afford to purchase equipment its use would scarcely be feasible. It is virtually impossible for small farms acting independently to undertake irrigation, control of pests, or, extensive drainage. Lack of capital and bargaining power may also place the cultivator of a small plot at a disadvantage in maintaining his product.

Aspects of land tenures are also of special significance for the organisation of agricultural production.

The unification or division of rights in the same land (i.e. type of ownership), labour system stemming from the nature of property rights etc. private ownership of sufficiently equalitarian and in sufficiently small units may entail an essentially familiar organisation of production. This is peasant proprietorship in the strict sense. Private ownership with considerable concentration of land holdings in units larger than a single family can cultivate requires tenancy or wage labour, feudal ownership tends to make labour assignment flow directly from the proprietary position and indeed to be a part of that position. The labour system associated with communal ownership must depend on the organisation of the kinship unit, village or governmental unit exercising the effective control of production.”

This extremely complicated nature often discourages analytical approach. Two types of attitudes are seen to be retarding the development of analytical techniques here. In the one case a purely mathematical mechanistic approach to economic problem formulating conditions and starting with assumptions which make the whole model unreal and thus make people who want real solution despair and think that economics is not tractable by a mathematical approach. The other attitude discards the very idea of a mathematical approach and is content with a simple descriptive way of tackling the problem. Naturally, such an attitude will never lead to the development of agricultural economics into an exact science and will in fact retard any real growth at all for any serious generalisation will require that we drop descriptive methods which after all ends only in recording observation and proceed to the next higher phase of the analytic method where however increasingly mathematical-statistical models will have to be used as has happened in all other sciences. I will end this section with an apt observation from Schultz on the theoretical equipment of an Agricultural Economist.

“Economic theory is not our long suit nor do we show a good hand when it comes to economic techniques. We are not inclined to devote ourselves to the task of forging new analytical tools for we distinctly are not tool makers. Our propensity not to make use of the tools that are available however, is hard to understand. Why is it that of this large and actively engaged professional group not many individuals are making use of modern economic techniques in their empirical studies? Many reasons for this situa-
tion may be given. But this is not the occasion to review them. The fact remains that to the extent that we do not take full advantage of the analytical tools of our mother, science in our researches puts us down with the old line crop specialist who is still trying to do corn breeding by ear inspection in competition with the modern geneticist with his theories and technique of hybridization. We need to understand more clearly the nature of economic theory and of empirical research.

The two are not, as is all too commonly supposed, competitive one with the other, but quite the contrary, the two are not only complementary but indispensable to each other."

"There are those among us who are instinctively suspicious of the hibernating arm-chair species and who at once see colors that are associated with the lower end of the visible spectrum when the word theoretical appears in the record. Then, too there are those among us who are filled with sophisticated doubts about that lowly species known as the fact finding empiricists and also are hurt to the quick when theoretical procedures are referred to as equipments as if theory were baggage, excess luggage, or, even rubbish which we just take as one does an old umbrella or a pair of rubbers, just in case it should rain."

These two sum up the correct attitude completely and need no further elaboration.

I will conclude with one remark on the type of analysis which is more suitable and immediately fruitful in agricultural economics. This relates to the question of what in analytical economics is called macro-analysis and micro-analysis. It will not again be out of place here to quote Koopman who gives an adequate idea of the purpose behind these two types of analysis.

"Another problem concerning the meaning of a 'complete' system is the extent of detail and breakdown required in defining and measuring the variables entering the system. Is it necessary to draw with individual commodities, or strictly homogeneous and therefore small groups of entrepreneurs or consumers? What appears to be sound intuition has led economists to study systems involving only broad aggregates in terms of money and index numbers of quantities and prices, a type of analysis for which the term macro-analysis has been used. Statistical analyses of this type were carried out by Tinbergen and the smallness of the residuals obtained with the use of a theoretically plausible set of macro-economic variables in each equation provides some practical justification for this approach. Nevertheless a systematic reconciliation of this approach with the behaviour equations of individual consumers and entrepreneurs postulated in economic theory would provide a desirable theoretical justification of the macro-economic method in which index number theory would play an important role.
The ideal method

Assuming that such justification can be given, the ideal solution would be a simultaneous estimation of all equations of a complete macro-economic system by a procedure which generalises that method for two equations in the previous section and which is therefore free from bias in large samples. If a (macro-economic) equation dealing with an additional commodity is then to be estimated this equation together with any further equation needed to explain the (micro-economic) variables introduced in the first mentioned equation must be grafted on to the macro-economic system. In this way a new, complete system is obtained which is more detailed than the original macro-economic system in that it also contains (an) equation (s) dealing with the individual market studied.

The approximate method

This ideal method makes the unbiased estimation of say, supply and demand elasticities for individual commodities dependent on the prior execution of a "master" investigation comprising with some degree of completeness the same inter-dependent economic system (country, world) and covering the same period. Obviously, such an investigation can only be the product of years of research in economic formulation of the equations, in the methodology of the simultaneous equations method (including problems of numerical calculation) in the collection of the appropriate statistical series, and in the interpretation of statistical results. Meanwhile the urgent and important econometric work being devoted continually to many partial problems cannot wait. There is therefore a pressing need for appropriate procedures to reduce the bias in the estimates of the co-efficients of, say, one particular equation studied without actually estimating all other equations. The complete system of equations is then only conceived theoretically and a priori plausible values are inserted for those of its parameters which are not estimated."

From this account it is clear that the inter-relationships for a system when all the components within the system are taken account of will be different from that when some components are related and studied separately. In the more developed exact sciences this isolation is carried out in such a manner that the isolation from components we are not interested in is complete and assumed. In economic analysis this isolation is not possible though if is often assumed. This way assumptions which are not real often vitiate the partial studies. A more scientific approach is to theoretically laydown the macro-model with the complete set of equations and parameters as far as possible and then in case of partial studies give a priori values to certain parameters whose values have not yet been completely investigated. While partial studies are thus proceeding a more laborious and long drawn out research into the complete system should be carried on. In agricultural
economics specially because of the complete lack of homogeneity of the units, the widely varied effects of the exogenous variables on the different units, the effect of the varying degrees of commodity production in the internal economy of the units concerned which brings in non-economic consideration, all these constantly vitiate the conclusions which are based on partial systems of equations where attention is focussed only by the variables we are interested in. More attention, therefore, in agricultural economics should be given on the macro-economic method. Further, for practical use, in agricultural economics in backward countries generally, neither the movement of the individual unit nor the condition of equilibrium of the individual unit is of prior consideration. It is rather the condition of equilibrium of the system, that to proceed from one to another, to graft, for example, a micro-economic system on to a macro-model is nearly impossible. For such cases detailed micro-analysis is neither helpful nor is likely to be of any lasting value. The macro-analytic model should therefore be more particularly studied.

Conclusions

In this paper I have tried consistently to emphasise that the blind practicalist-empirical approach to agricultural economics has led us to a dead end and our research has degenerated into either agronomy or agricultural technology or sociology and rural welfare. It is time to give this blind approach, to clearly lay down and unify the theoretical basis of agricultural economics and to proceed to research on more modern analytical method fully utilising the powerful tools which are being supplied by statistical and mathematical models. I have mainly emphasised the methodological and theoretical aspects rather than the applied aspects because I think that unless more rigour is introduced into the theoretical outlook it will be useless to develop unconnected, purposeless application of this or that aspect any longer as this science has already passed that stage when it could benefit directly from empirical practicalist investigations.

SCOPE AND METHOD OF TEACHING AND RESEARCH IN AGRICULTURAL ECONOMICS

By

Rao Bahadur P. C. Patil

L.Ag., D.Sc., (Bom.) M.Sc. (Wis. U.S.A.) I.A.S. (Retired)

I must admit that I have not been able to attend the conferences of the Society and I do know whether most of the Professors of Agricultural Economics in the different Agricultural Colleges and in the different Indian
Universities, attend the conferences. If they do, probably the best procedure would be to discuss the two subjects i.e. (i) the Scope and Method of Teaching Agricultural Economics and (ii) the Scope and Method of Research in Agricultural Economics, in two separate round-table meetings. Instead of following the line of writing papers on particular subjects for reading before the Conference, I am writing a few lines, more on the lines of a talk which I would give before the round-table meetings proposed above.

Scope and Method of teaching Agricultural Economics: I should suggest that in the round-table meeting of the kind proposed, each of the teachers in Agricultural Economics should tell the meeting which book or books, on General Economics and Agricultural Economics, he teaches and what books he recommends his students to read for general reading. If by experience he has made changes in the books he should tell the meeting why he did so and whether the change was found better. The discussion should be recorded verbatim.

I was Professor of Agricultural Economics from 1925 to 1932, at the tail end of my service. The chair of Agricultural Economics was the first of its kind at the Agricultural Colleges in India. I always told my students, some of whom were my assistants later, that somebody had to make a beginning and that it had fallen to my lot to do so, and that they would have to improve the methods and standard of teaching. A few words about my preparation as a professor of Agricultural Economics may be useful to the would-be teachers. I had some advantages as well as some handicaps. I had taken my first degree in Agriculture in 1906. After working as Superintendent of College farm and Demonstrator in Agriculture, I was Inspector of Agriculture, Deccan Division. In 1911 I was sent to Europe to study agricultural organization in western Europe. On my return I acted as Professor of Agriculture and again shifted to district work. From 1914 to 1920 I worked as Deputy Director of Agriculture in one or the other division of Bombay Presidency.

During the period I worked as Deputy Director, I always thought there was a gap in our agricultural education, as Agricultural Organization or Agricultural Economics was not then taught in Agricultural Colleges. I, therefore, took study leave of 18 months and went to the United States of America in 1920 to study Agricultural Economics. Since I was in Indian Agricultural Service, I then never thought of being a professor in a College. Still before I proceeded to the States I read Economics and completed a thesis (Crops of the Bombay Presidency, Their Geography and Statistics) for M.Sc. The thesis was later published by Government. Not having studied higher Economics in University I had to study Economics and Agricultural Economics side by side at Madison (Wisconsin). This was a
bit of handicap. But my actual experience in agriculture of over 14 years was an advantage to me. With the inspiration from Dr. H. H. Mann, the Principal of the College of Agriculture, Poona and later Director of Agriculture Bombay, his assistants (of whom I was one) were making economic investigations and writing research bulletins.

To my mind a good grounding in General Economics and actual experience in agriculture are very necessary for a teacher of Agricultural Economics.

Teaching Agricultural Economics for B.Sc., in Agriculture (i.e. the first degree): A course in General Economics (call it Principles of Political Economy or Economics) is pre-requisite to Agricultural Economics. For this purpose American books (like the "Outlines of Economics" by R. T. Ely and "Principles of Political Economy" by T. N. Carver) which draw their material from agriculture are better. For beginners "Elementary Principles of Economics" by R. T. Ely, and G. R. Wicker is a very good book. The English and Indian authors draw material from trade and commerce. I am inclined to think that unlike American Professors (many of whom had not taken agricultural degree in my time), the Indian professors (with exceptions as in the case of D. R. Gadgil) do not care to know agriculture. Till Indian authors of books on General Economics change their attitude and draw material from every-day life for illustrations, it is better to follow American texts on General Economics.

As to the texts on Agricultural Economics it is high time that the present professors of Agricultural Economics write text books on Indian Agricultural Economics. I should propose that rather than attempt to write on "Indian Agricultural Economics"—an ambitious attempt—they should write books for their own provinces, since agricultural practices vary from province to province. What to write and what subjects to be especially treated will be the matters for the Professor or any special worker who attempts to write such text books. I have not attempted to write a book on Agricultural Economics. Still my book "Statistical Atlas and Resources in Kolhapur State" will give general lines which I should propose for such provincial text books. My book is nearing completion and may be out within six months or so. Probably it will be useful for Agricultural colleges in Bombay Presidency. If I had written a book for Western India it would have been more useful to Bombay presidency but my object was to write for Kolhapur, in particular, as I could get and collect relevant statistics, being a member of the Council from 1941 to 1944 when the idea was mooted. Sir Manilal Nanavati’s idea of getting regional surveys written by provinces and states is similar. Such surveys will supply material for writing texts on Agricultural Economics and also for making use in classes.

Till more suitable texts on Agricultural Economics are made available,
"Outlines of Agricultural Economics" by H. C. Taylor and "Principles of Rural Economics" by T. N. Carver may be useful.

Post-graduate Courses i.e. M.A., M.Sc., Ph.D., etc., in Agricultural Economics:—In recent years post-graduate degrees are given on thesis only. I cannot say much about post-graduate degrees by thesis in General Economics or Science. I am, however, not satisfied with such degrees in Agricultural Economics. I am of opinion that no post-graduate degree in any branch be given on thesis alone. Thesis should form only part of the Examination. Restricting my remarks to Agricultural Economics, I am of opinion that no degree be given for thesis alone. There should be two papers (at least one) on general Economics and a small paper on Statistical methods in addition to thesis. One can write a good thesis for M.Sc., M.Ag., or Ph.D. in Agricultural Economics by making intensive study of a small problem, without having grounding in General Economics. Such a person cannot tackle any other rural problem. I have seen a number of theses and have discussed rural problems with their writers and I cannot change my considered opinion.

Work of Professor of Agricultural Economics:— I also think that the work and activities of the professor of Agricultural Economics in an Agricultural College should not be restricted to his classes only. He should have a staff for research and investigation and he should be expected to produce research bulletins. I had such a staff and we could produce several research bulletins. Assistants get real training and their work is very useful to them in their after life. One of my old assistants is now the Chief Marketing Officer, Government of India and two are doing excellent work in Bombay Department. While they were helping me in making research, they taught in classes also. It worked very well. I fear the system is discontinued and no satisfactory arrangements are made for teaching and research in Agricultural Economics at the College of Agriculture, Poona. I think that teachers in Agricultural Economics must be investigators themselves. Investigators if not associated with teaching cannot correct themselves and cannot crystallize their ideas.

It is such co-operative work, with day-to-day personal contact with assistants and investigators that builds up material for Agricultural Economics of a province or a country. I have no objection to having separate Agricultural Economics sections for research in the Provinces but to man them they must first be actual investigators under the working professor or under one relied for working as head of Agricultural Economics section.

Apart from regular class work the Professor should conduct weekly seminars for students. Such seminars should be attended by the Professor and his assistants. Occasionally outsiders working in Agriculture and even other officers (Irrigation, Forest and Settlement Officers, Engineers) and guests from other provinces should be invited. I was conducting such
seminars while I was teaching in Agricultural College, Poona. Each student should prepare a paper. Papers of all students for the year should be related so that at the end of the year the College would have tackled one subject. In course of time several subjects would be tackled.

Scope and Method of Research in Agricultural Economics:—Here too I have to admit that I am not in touch with the work done in different provinces. Prior to 1910 individuals interested in Agriculture and Agricultural Economics made investigations and wrote books. Such attempts were made in Bombay and Madras. G. F. Keatinge (the then Director of Agriculture) and Dr. Mann were pioneers in Bombay Presidency. They had very little staff for such work; still it was they who laid the foundation of rural research in Bombay. Dr. Mann used the services of his willing assistants who later on did and are doing, in their retirement, useful work in research. Some of them, in their sixties and seventies, are doing what they can. The Board of Economic Inquiry, Punjab has produced several surveys. The Economics section of the Bombay University is probably doing some work. The theses presented for M.A., M.Ag., and Ph.D. however, show that the students are still copying the old lines and following village inquiries with very little change. To my knowledge except the very useful work which is being done in the “Politics and Economics” Department of the Servants of India Society under Principal D. R. Gadgil, new lines are not opened.

Library and references:—For teaching, research and for study, a good library at hand is very essential. It may also be remembered that our students and fresh assistants cannot, for want of guidance, make use of library and references. It is the important duty of Professors and Chief investigators to teach the students and junior investigators how to make use of library and even of individual reference books.

There should be a study room attached to the library. The Professors should give mimeographed sheets listing books and even their pages bearing upon the subject he is going to lecture upon. Similarly the Chief investigator should give a list of books which will be useful to his assistants in tackling a particular problem and even its particular phase.

There are a large number of foreign and Indian books and magazines which deal with rural problems. Their use in teaching and research work in our colleges and institutions will be a great help.

Before I close, I suggest that for improving teaching and research, it is advisable for the workers in different provinces to meet in round table meetings and informally discuss and exchange ideas.

In the interest of agriculture of the country, it is desirable that the Ministry of Agriculture, Government of India should arrange two small conferences under the aegis of the Indian Society of Agricultural Econo-
mics, where the actual workers in Government service and workers in other societies like the Indian Society of Agricultural Economics, Politics and Economics Department of Servants of India Society, Economics Departments of Universities and other men who have done research in and are teaching Agricultural Economics may be invited.

SCOPE AND METHOD OF TEACHING AGRICULTURAL ECONOMICS IN INDIA

by

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Agriculture is the basis of our national life and it is an industry which provides not only most of the food-stuffs but also some of the essential raw materials of industry. There are wide variations in land tenures and the methods of production from one country to another and even in the same country, from one place to another. In the modern world when agriculture is considered both as "a craft and a business", the income and the standard of life of the agriculturist depend not only on his ability (as a craftsman) to raise a big crop, but also on his ability (as a businessman) to sell it at a good price. To be successful he must know when, where and at what rate to borrow his working capital, and how to sell at the right time at a fair price. The Indian farmer, it is said, is poor not because he is inefficient as an agriculturist, but because he is a bad businessman. It is here that the rural economist has got a tremendous responsibility to discharge by studying farm business and suggesting methods to improve agriculture by diffusing 'the economics of agriculture' to the masses and making them agricultural conscious.

Literacy in Villages:

It is very rarely we find people taking any interest in sending their children to village schools. Either we do not find any school in rural areas or it is inadequately cared for. The reason is simple. Some villages are far away from urban areas and consequently there is no easy chance of their being inspected by the officials of the Government Department. Some of the pupils are required, during agricultural seasons, to help their parents i.e. to look after the cattle and to take meals at noon for the farmers. This is about general education among the farmers and their sons.

Imparting knowledge of agriculture to the farmers who are agriculturists by profession will be like carrying coal to New Castle. But they must be
told that the new coal can be put to more than one use, thanks to the advance
of scientific knowledge. The fertilisers and improved or modern implements
have not reached the farmers either because they are costly or they have not
been, by proper propaganda and demonstration, apprised with the utility of
the improved methods. All that they know is the availability of ground-
ut-oil-cakes with the Agricultural demonstrator's.

The provision of implements on hire-purchase system has not been in
vogue to any appreciable extent and as such the masses do not venture to
purchase the implements for themselves. The cattle efficiency is so weak
that even a slight increase in the weight of the plough cannot be thought
of by any farmer. The lack of facilities to know things fully in their proper
perspective acts as a hindrance to their taking interest in all the aspects of
agriculture. So far they have realised only the importance of co-operative
credit societies to borrow invariably Rs. 50 or in certain cases Rs. 100 and
in exceptional cases Rs. 200 to 500. They are not aware of the prin-
ciples of co-operation, much less the consequences of non-payment. Disease
resisting varieties of crops which are the results of long research do not
attract the tenants. Experiment is not within the reach of an ordinary in-
dividual agriculturist who has uneconomic and scattered holdings.

Teaching:

The success of agriculture depends very largely on the zeal and initiative
of individuals. Education makes men live full life and for agriculturists,
education is necessary to acquaint them with the modern science of agricul-
ture and co-operative methods. If the teaching is to be more limited and more
practical it must be to improve the business and craft of agriculture with the
advancement of rural reconstruction as a special object in a province whose
population lives in villages. We must endeavour to increase the efficiency
of rural leaders, employees, and officials. To train a few intensively, to
conduct field-surveys and to establish a close contact with the farmers are
the essential pre-requisites of any scheme of agricultural development or
education.

Agencies:

The teaching of agricultural economics can safely be entrusted to the
following agencies:

A. Government Colleges.
B. Government demonstration farms.
C. Private associations organised and managed by non-officials.

The rural population can be classified into professional agriculturists,
wage-earners, mirdas and others. According to the capacity of the indi-
vidual, he can join in any one of the above mentioned institutions. The
college is intended to impart specialised course in the theory of agricultural
economics of not only your country but also of other representative countries in the world as, for instance, Russia and Denmark. The college might teach both agricultural economics and co-operation. The qualifications for admission should be a ‘pass’ in the intermediate examination. Honours course also might be instituted with “Agricultural Economics” as special subject. Here, this will be one of the eight subjects in which a student is expected to be proficient. If it is only a B.A. degree i.e., two years after intermediate, then a detailed syllabus is necessary.

**Course of Study and Syllabus:**

Agricultural Economics might be introduced as one of the eight subjects in Economics Honours. The Annamalai University has done pioneering work in this. If the course is strengthened by a field survey regarding indebtedness, irrigation, cattle population, sub-division and fragmentation of holdings etc., it would be of much use to the students.

A B.A. (Ag.) degree may be given to those who undergo a course of two years with the following syllabus:—

**Part I Economics**

A. General Economics.
B. Sociology.
C. Economic History or Public Finance.

**Part II Co-operation**

A. History and Principles of the movement.
B. Co-operative Law.

**Part III Technical Subjects**

A. Irrigation.
B. Soil (Collective farming and/or co-operative farming).
C. Manure (Sanitation etc.).
  d. Machinery etc. including country carts.
D. Farm Costs.

**Part IV Field Work.**

A. Visits to demonstration farms.
B. Lectures on rural sanitation.
C. Village Panchayats Organisation.
D. Surveys of population and nature of cultivation etc.

**Part V.**

A. Essay in English or in the mother tongue.
B. *Viva-Voce* in the mother tongue on the utility of Demonstration farms, Peoples’ Schools, sanitation, and Village Panchayats.
Examinations should be organised in such a way that uniform standards are maintained throughout the province for degrees. There should be enough variety of subjects and the methods of instruction to allow of different qualities and intensities of training for such class of students.

Apart from such Government education, private institutions must be encouraged for the lower courses. Organisation of societies for village education might be encouraged. The land holders might be given some financial help if they try their hands on these lines. Donations from the public might be raised by village folk for such purposes. Certain plots of land must necessarily be always owned by the state but placed at the disposal of enterprising agriculturists to experiment on them with new methods.

However great be the wisdom of the experts, agricultural improvement will to a large extent depend on the cultivator. His welfare and development, his understanding of the needs and exigencies of the situation are of fundamental importance. This can be achieved only by carrying on more research and making it available to the farmers at a cheap price and in an understandable way by experiments. Research scholarships and degrees may be awarded to those who work on subjects such as (a) The development of co-operation in India between "......" period; (b) Agricultural Marketing; (c) Population and food supply; (d) Land tenures; (e) Agricultural Labour etc.

To conclude, arranging of popular lectures on agricultural improvements, lantern slides, publication of readable text books in regional languages, publication of periodicals which will contain the latest developments in the science of agriculture, distribution of pamphlets written by experts on the various topics of rural India and field instruction are the important factors which would determine in the long run the success of teaching Agricultural Economics in India.

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SCOPE AND METHOD OF TEACHING AGRICULTURAL ECONOMICS*

by

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Scope of teaching and its approach: The teaching of Agricultural Economics must begin with a study of the principles of Economics as no student of Agricultural Economics will be on firm ground without it. The next step would be a thorough grounding in the principles of Agricultural Economics,

* Thanks are due to Dr. R. P. Asthana, M.Sc., Ph. D. (London) D. I. C., F. A. Sc., Principal, College of Agriculture, Nagpur for his valuable suggestions in the preparation of this paper.—N. M. J.
TEACHING AGRICULTURAL ECONOMICS

which should relate to all the stages from production to consumption, through which agricultural produce passes. This study is intended to create a mental equipment which is necessary in dealing with economic problems concerning agriculture.

Application of principles would be a step further. It is advisable to study the nature of the economy of the country as a whole as it comprises a single administrative entity and possesses an economic design of its own. It is too early to take up a wider region as it is beyond the comprehension of many, even at a later stage. Then would come the study of a smaller unit such as a province, state or Pradesh, followed by a study of the various natural divisions of a unit or its crop-zones having more or less identical agricultural conditions. Attention may then be directed to the details of village economy and finally to the particular conditions obtained on farms, alternative types of operations conducted and the methods of production followed therein. When this is done, it will be necessary to retrieve the steps for detail study by what I may call a horizontal approach. This will mainly consist of a comparative study of the economic conditions and of agricultural operations followed on the various farms and regions. A full course of study in Agricultural Economics may therefore consist of the following:

(1) Principles of Economics and Indian Economy.
(2) Principles of Agricultural Economics and Indian Rural Economy.
(3) Farm Economics including principles and practice of agricultural costings.

Teaching Institutions and Curricula: Teaching of Agricultural Economics may rightly begin at the collegiate stage. Prior to this, it is enough to introduce the students to the nature of rural economy and to the place of agriculture therein. This may be done through subjects like Agriculture and Geography. This will stimulate interest and serve as a link between the secondary education curricula and the collegiate education.

The bulk of specialized teaching in Agricultural Economics, particularly the portions relating to farms, may rightly be regarded as the primary responsibility of Agricultural Faculties. The applied nature of the subject does not warrant its study being included in detail at the undergraduate stage in the Arts and Commerce Faculties. These Faculties may preferably concentrate on the study of principles of economics and of rural economy along with similar other branches of economics. This will give the candidate a strong grounding in fundamentals as also an acquaintance with the facts of rural life and occupations. A good number of Arts and Commerce graduates branch off into channels in which the applied knowledge of the Agricultural branch is not likely to be of any particular avail. Intensive study of Agricultural Economics may therefore be taken up at the Post Graduate
stage only, where, at present, the place given to Agricultural Economics is inadequate. In the Nagpur University, where the Masters degree examination in Economics is by papers alone, the portion entitled Rural Economics covering Indian Rural Economy with special reference to C. P. and Berar has only half a paper in it and carries only 6% of the total marks for papers. There is therefore the need of providing better opportunity to Post-Graduate students for the study of Agricultural Economics.

With regard to the Agricultural Faculties and particularly the agricultural graduates, the question has to be considered from a totally different point of view. It is mainly these graduates on whom lies the responsibility of influencing agricultural economy of the country by projecting into it what they have learnt at the University, since they are expected to keep in touch with agriculture in some capacity, be it that of a farmer, a research or an extension worker. Those who go back to land are by far the most important of these though, admittedly, the majority of Agricultural graduates in India has not taken to farming. However, such would not be the case in future. With the opening of large irrigation works, improvement of communication and transport, capitalization of land and provision of amenities of life in the rural parts, there will be sufficient inducement to men trained in the practical aspects of agriculture to take to farming or allied occupations. In view of this, it is absolutely necessary to change the curricula of agricultural degrees and to give them a vocational bias. There is a strong need for the revision of the curricula of the Agricultural degrees so as to produce graduates who will be successful farmers and will be able to impress fellow cultivators by their superior ability in making the farms pay. The revised curricula should offer better scope therein for teaching Agricultural Economics which is calculated to stand them in good stead in their agricultural career. It is observed that the agricultural curricula in various universities has become rather heavy due to the inclusion of numerous compulsory subjects, with the effect that the candidates are not adequately trained even in a few branches of agriculture. For the same reason teaching of Agricultural Economics is not fully effective. Opinion is therefore largely in favour of introducing some degree of flexibility in the courses offered to entrants so that candidates may exercise some choice in subjects to be studied according to their aptitude and interest. The teaching for the agricultural degree should therefore be in some compulsory subjects, which are basic to agriculture, such as Agronomy, Chemistry and Botany. In addition to this, elementary instruction of a very practical nature in the various allied branches should be included in the courses, such as Live-stock Management, Farm Engineering, Pest, Weed and Disease Control, Horticulture and Fruit Preservation. To this list must be added Rural Economy and Farm Economics which will be compulsory to all. Whether a candidate is to be a research worker in any branch of Agriculture or its ancillary
TEACHING AGRICULTURAL ECONOMICS

science, the knowledge of this subject will be essential to him in dealing with the problems of his own branch. Since the details of each of these subjects are unnecessary to all the candidates they may be grouped into optional subjects for the purpose of intensive training. A student desirous of knowing more of these subjects should select one or two out of the list and content himself with the elementary knowledge of the rest in order to make his training complete and all-embracing, as is implied by the agricultural degree. The special subjects will then be respectively Animal Husbandry and Dairying, Agricultural Engineering, Entomology and Mycology, Horticulture and Fruit preservation. In this list will be included Agricultural Economics. With the elimination of the details of several subjects, candidates will be able to concentrate and acquire a thorough grounding in the optional subjects in place of the mere browsing in several subjects which they were having before. This proposal consists of making the study of Rural Economy and the Economics of Farming compulsory to all and providing opportunity to specialize in Agricultural Economics to those who desire to do so.

Method of teaching: Teaching of Agricultural Economics mainly consists of class room lectures. Some Institutes arrange whirl-wind tours to farms and markets or hold seminars. The knowledge therefore tends to be bookish and divorced from the actualities of the country-side. Effort must therefore be made to disarm this criticism by placing the candidates face to face with the problems of an economic nature with which they are likely to be confronted in future.

Teaching in Agronomy and allied subjects which are really the different phases of the agricultural industry is carried on piece-meal and subjectwise for the sake of convenience and efficiency. However, in directing the operations of a farm on sound economic lines, it is necessary to assimilate, combine and put to practical application the scientific knowledge gained in various subjects. Successful farm management demands a keen appreciation of the nature of the factors of production at the disposal of the farmer, environmental influences and market conditions mainly from the economic standpoint, a faculty to be imbibed by the study of Agricultural Economics. The teaching of Agricultural Economics from the strictly utilitarian point of view, so far as the agricultural graduates are concerned, must therefore aim at imbibing and developing this faculty. The final aim should therefore be to create a mental framework which will be the graduate's equipment designed to mark his performance in any branch of agriculture with sound economic acumen. This aspect can be developed by providing opportunity to have an exercise in the direction. It is therefore suggested that the final year classes at Agricultural Colleges should be entrusted with the running of an instructional farm by setting out land for the purpose. The students will have by then covered a good deal of several subjects, the knowledge of
which could be co-ordinated in its application from the economic standpoint of a single farm. It is further suggested that the farm may be managed on a co-operative basis under the guidance of teachers. The students will discuss, decide and undertake all the supervisory and directional work and themselves carry out the operations whenever possible. Book-keeping and cost accounts as also marketing of all the farm products will be conducted by them. Teaching of practical lessons in several subjects such as Crop Husbandry, Animal Husbandry and Dairying, Farm Engineering and Plant Protection may suitably be combined on the same farm, and their economic aspects worked out. This, in my opinion, is a feasible method of teaching the economics of farming, dairying and allied subjects.

Though the above step will considerably help the students in learning farm-management, conditions on an instructional farm are not likely to remain identical with those obtained in the villages. The student has further to be acquainted with the several limitations and diverse situations existing on the cultivator's farms. It is therefore suggested that practical instruction in Agricultural Economics may also be given at times on cultivators' farms and orchards. The Agricultural Colleges should "adopt" for this purpose one or two villages and orchards in the neighbourhood having an easy access by motor truck. By an arrangement with the owners thereof, the students could be permitted to observe, take notes and even conduct some operations for themselves. Teaching in several agricultural branches will take a turn into the reality of cultivating conditions and will possess the economic background at every step, much to the advancement of the objective of agricultural education in the economic set-up of the future. One may readily anticipate several difficulties such as the arrangement of time-tables and transport. It has already been pointed out as to how the other subjects taught at the Agricultural Colleges stand to gain by his method. In view of this, full days or shifts may be provided in the time-table when the candidates could be taken to these places. Transport expenditure, I hope, will not stand in the way of bringing the future agriculturist workers into contact with the environment of their chosen profession, for which they are being prepared in the course of their training. The probable dislocation in the teaching in other subjects could be avoided.

Corresponding changes in the examination and the allotment of marks will have to be made. My proposal involves the introduction of field practicals in Agricultural Economics as in several other subjects. Marks may be allotted to this also and the examination will consist of oral test based on the written notes of the candidate's observations and investigations carried out by him in the course of the practical counterpart in teaching. The students will be required to hand over these records for examination purposes. In short, it is time to forge a link between college education and farm enterprise.
ECONOMICS OF MECHANISED AGRICULTURE

For the agricultural degree-students, the course in Agricultural Economics will then cover:—

Compulsory:

Theory (1 paper)
1. Indian Rural Economy
2. Farm Economics

Optional: (2 papers.)
1. Elementary Principles of Economics.
2. Principles of Agricultural Economics.
3. Indian Rural Economy.

Practical:
1. Survey of a village

The Post-Graduate degree in Agricultural Economics may be partly by papers and partly by thesis as under:—

Theory (2 papers) Practical Theory (2 papers) Practical
2. Principles of Agricultural Economics.
3. Indian Rural Economy.
4. Farm Economics
5. Statistics & Research methods.

Thesis.
An original investigation.