



Role of social sciences in agricultural development in India

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Agriculture, as the backbone of Indian economy, plays the most crucial role in the socio-economic sphere of the country. Indian agriculture is a diverse and extensive sector involving a large number of actors which includes farmers, farm women, rural youth, agricultural researchers, extension workers etc. Historically, the Indian agricultural research system is the zenith of a process which started in the 19th century and which resulted in the establishment of the Imperial (now Indian) Council of Agricultural Research (ICAR) on the recommendation of a Royal Commission on Agriculture in 1929. Since then there was a stupendous evolution of agricultural research in India. It has been one of the remarkable success stories of the post-independence era through the association of Green Revolution technologies even though India has one of the largest and institutionally most complex agricultural research systems in the world. The green revolution contributed to the Indian economy by providing food self-sufficiency and improved rural welfare. One of the highlights of the green revolution era was that the life sciences were augmented with emerging social sciences in the nation to bring about a phenomenal change in the agriculture and allied sectors.

Social science plays an important role in community empowerment and socio-economic development of the farming community in India. Social sciences when reinforced with biological sciences will provide human face of science, because science is for society and hence science without human face is body without soul. Social sciences study the nature, measurement and analysis of needs and aspirations of people so that science can continuously remain relevant and contribute to the welfare of mankind. Specifically, social sciences help organize research and education around societal problems in scientific disciplines by improving focus, design, implementation, evaluation and demonstration of evidences of impact. It is time that social sciences of agricultural economics, agricultural extension, agricultural statistics, food and nutrition and home sciences get due attention to play their role as ears and eyes of the National Agricultural Research and Education System (NARES). Various

streams of social sciences in agriculture are briefly discussed below:

Agricultural economics: The role and contribution of agricultural economists can be traced to the phases of agricultural development in India and began with the inception of State/Agricultural Universities in early 1960s. During the last 10 years, agricultural economists have been actively involved in formulation of five year plans both at the centre and state levels. However, it is being felt that the role and contribution of agricultural economists is not fully understood and recognized at all levels in the NARS. Most of the heads of Institutions (Directors and Vice Chancellors) and other senior managers are not fully aware of the role that agricultural economists can play in the system. This is reflected in the routine duties quite often assigned to agricultural economists in many institutes/SAUs. The future role may include prioritizing agricultural research for enhancing the development value of agricultural technologies and impact assessment; development of supportive policy choices in and their impacts relating to food and nutritional security, reduce poverty, transform low income agriculture to high income sustainable agriculture at rapid rate, continuing shortage of oilseeds and pulses, rationalization of subsidies to encourage sustainable resource use, adapting and mitigating the adverse impact of climate change, evolve institutional arrangements for implementing eco-system services, analysis of sustainable livelihood approaches, land market reforms, linking farmers to markets and value chains, dietary changes and enterprise diversification, institutional innovations for scaling up and scaling out of technologies and good agricultural practices, PPP models for convergence and synergy among public sector, private sector, NGOs, CSOs, FOs, etc., Women and youth engagement in development, etc.

Agricultural economics is concerned with farming as a business and with agriculture as an industries. In the more restricted sphere of farm management the student of agricultural economics is concerned with the business problems of the firm of the producing unit of the industries. In the wider sphere of social economics he is concerned

with the general economic pattern of the agricultural industry as a whole and with the forces responsible for the molding of that pattern; he is also concerned with the relation of the agricultural industry to other industries within the national economy as well as with its place in world economy.

Agricultural extension: Role of agricultural extension discipline in technology perfection and transfer during the first green revolution period and current phase of second green revolution hardly needs any emphasis. The network of KVKs in NARS has been characterized as an institutional innovation for agricultural development. Their role in perfection and diffusion of new technologies through FLDs is well-known. Agricultural extension specialists have contributed immensely in training of government extension workers, farmers, farm women and rural youth. They have demonstrated, on large scale, the power of diffusion science, through their role in implementation of component 3 of recently concluded NAIP. They have been also instrumental in providing conducive platforms to agro-biological scientists to disseminate and popularize their new technologies and also to get feedback from farmers as well as other stakeholders like seed companies, input supply agencies, processors and traders.

Agricultural statistics: Research in statistics is fundamentally important and absolutely essential. Fusion of statistical sciences in agricultural sciences for quality agricultural research is also very important and highly desirable. Similarly research in other social sciences with blending of statistical sciences is also important and desirable. The major role of statistics in agricultural sciences is data designing, which essentially involves data generation, data analysis, data interpretation (Inferences), and deriving knowledge. All these stages are intertwined and sound application of statistical theories is required at every stage. Thus, sound knowledge of statistical sciences ably supported by basic research in statistics is absolutely essential for the growth of agricultural research. It is no wonder then that the great vision of research managers in ICAR in 1930 enabled them to realize the importance of statistical sciences in agricultural research, which led to creation of a statistical section in the ICAR to assist the State Departments of Agriculture and Animal Husbandry in planning and designing their experiments, analysis of experimental data, interpretation of results, and also rendering advice on the formulation of the technical programs and examining the progress reports of the schemes funded by the Council. The activities increased

rapidly and studies were initiated for developing objective and reliable methods, based essentially on crop cutting experiments, for producing yield and production statistics of principal food crops. The efficiency and practicability of these methods was demonstrated in different States for estimating crop yield. As a result, in the course of a few years, the method was extended practically to the entire country to cover all principal food and non-food crops. Presently, 9 lakh crop cutting experiments are conducted in India to estimate production of 48 crops. Basic research in statistical sciences is fundamental to its innovative applications in biological / agricultural sciences. It, therefore, becomes of paramount importance to ensure that for quality basic research in statistics all stumbling blocks be cleared so as to warrant quality agricultural research, which takes us on the path of ever-green revolution; agricultural research which is globally visible, competitive and acceptable.

Human nutrition: Nutrition research is a blend of basic and applied sciences in which social aspects like communication for behavioural change, statistical and economic considerations for planning programmes are important. For health and nutrition security, there has to be Awareness, Access and Affordability to ensure balanced diet and also conditions of absorption (safe drinking water and disease free environment) and health care outreach. The role of community workers and empowerment of women are very important. Ensuring food and nutrition is the responsibility of agriculture. It is reported that not with standing several development and feeding programmes, India battles under-nutrition and loses more than US\$ 12 billion in GDP to Vitamin and mineral deficiencies. Top-down approach without preparing the community and ensuring its participation is one of the reasons for inadequate impact of several development programmes in human nutrition. Food security (balanced diet supplying required quantity of energy, protein, vitamins and minerals), should be addressed at household and individual level rather than stopping with calorie sufficiency at the national level. Nutritional security can be achieved with a blend of scientific, technological and social engineering.

Home science: Home science aims at creating better standard of living and family ecosystem. The main focus is empowering women and girl child in rural and urban households through continuous academic, research and extension activities. The beginning of home science in colleges was made in 1932 by Lady Irwin College in Delhi. From 1938 onwards Madras University introduced home

science at the degree level. Agricultural institute of Allahabad had also started a diploma course in home science in 1935 and it became a university level department in 1945. The need for teaching home science was recognized in most of the SAUs and home science colleges were opened since 1960 and 1970s. Since then Home Science education, research, and outreach programmes have reached people and benefitted them in many ways.

The major areas of home science include, apparel and textiles, foods and nutrition, resource management and community sciences; human development and family studies and home science extension and communication management. Home scientists are involved in several academic programmes like teaching and guiding students, training human resource, entrepreneurship development, personality development, etc. The main areas of home science research include, development of technologies and their validation, changes in the attitudes of women in villages, integrated development of rural families, collaborate with government and non-government agencies in planning, implementation and evaluation of development programmes. The main outreach programmes in home science include, conduct demonstrations (FLD and OFD), vocational training, cognitive and skill development, contribution to information Centre providing information to the farmers, SHGs, liaison with line departments, database development on nutritional status, information needs, women entrepreneurship, etc.

Agricultural education and social sciences: Indian Council of Agricultural Research (ICAR) over the years has introduced vital reforms in Agricultural education for improving its quality, relevance and uniformity across the country. In Social Sciences Group, ICAR has developed the course structure and course contents for three programmes namely Agri-Business Management, Agricultural Economics, and Agricultural Extension. Agri-business programme has been introduced for the very first time, while Agricultural Economics and Agricultural Extension programmes have been given new life by adding new courses and updating the others in tune with the changing time and future needs.

Social science research in India has had a chequered history. There are more than 400 universities in India with more than 500 departments of social sciences. While universities are the locus of academic research, there are more than 200 government research institutes and autonomous research organizations which undertake social science research as well. Some NGOs and policy research

initiatives such as think tanks have also produced specific development focused research products but generally do not have longer term interest in research and the quality of their research is not yet established.

In general Social sciences focus on the study of society and the relationship among individuals within society. Social science covers a wide spectrum of subjects including extension, economics, statistics, home science, political science, sociology, history, anthropology, and law. In particular, social scientists are equipped with the analytical and communication skills that are important throughout many industries and organizations.

From 1977 to 1980, the International Potato Center (CIP) implemented an interdisciplinary farm-level research programme in the Mantaro Valley of highland Peru. Unlike many other agricultural research projects, anthropologists, economists, sociologists, plant physiologists, agronomists, pathologists and entomologists were involved in this project. The three main objectives of the programme were to sensitize CIP and national-programme scientists to the value of on-farm research, develop and field test procedures for on-farm research with potatoes and train national programme personnel in the use of on-farm research techniques.

When all these technologies are considered promising by biological scientists, especially those who researched and developed them, social scientists could and should intervene to help generate evidence through field research to establish the socio-economic and operational feasibility of these technologies under field conditions. This could save on a lot of time, money and resources being wasted in the development of technologies that may be impractical under field conditions.

Conclusion : Any research endeavor is ultimately meant to serve society one way or another. Social scientists are close to society and know well societal needs, aspirations and field realities. Thus, social scientists can add value to biological research if they are involved in agricultural research projects as partners in multidisciplinary teams. Moreover, social scientists can contribute significantly to feedback and impact assessments, which are important domains of any research outcome. Social scientists study the nature, measurement and analysis of people's needs and aspirations so that science can continuously remain relevant and contribute to the welfare of mankind. They can help organize research, education and training around societal problems in biological science research by improving the focus, design, implementation, evaluation and demonstration of evidence of impact.

The scope of social sciences has been defined at national and international levels, to inter alia include economics, sociology, political science, geography, philosophy, psychology, anthropology including agricultural extension education and statistics. If these disciplines work in isolation and without collaborating with biological scientists, their impact would be negligible in solving problems societies face currently or likely to face in future. Social scientists can significantly enhance their contributions if they improve their own capacities by becoming better skilled with tools and methodologies of

social research.

The CGIAR centers in general, and IFPRI and IRRI in particular, have been making efforts to enhance the role of social sciences in agricultural research by taking up activities including organizing workshops, seminars, symposiums and panel discussions. It is expected that in coming years, these efforts will pay off. These international institutions can do a lot to improve the capacities of social scientists in developing countries through workshops and trainings at different locations.

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