

## Profile

### National Centre for Agricultural Economics and Policy Research, New Delhi

The National Centre for Agricultural Economics and Policy Research, a Social Science-based institution was established in March 1991. The establishment of such a Centre fulfilled a long-felt need for strengthening agricultural economics research in National Agricultural Research System and ICAR's commitment for sustainable growth in agriculture not only from technical and environmental point of view but also from socio-economic perspective. The Centre started addressing to its mandate from 1995 soon after acquiring a modest space, critical mass and developing basic and supporting services. The Centre is presently housed in a small building within the Indian Agricultural Statistics Research Institute Campus, Pusa, New Delhi. A plan to construct its own office building in the same campus during the X Plan is under consideration. The Centre has an approved cadre strength of 20 scientists most of them are already in position. However, scientists from the collaborating institutions also add to the professional capability and output of the Centre.

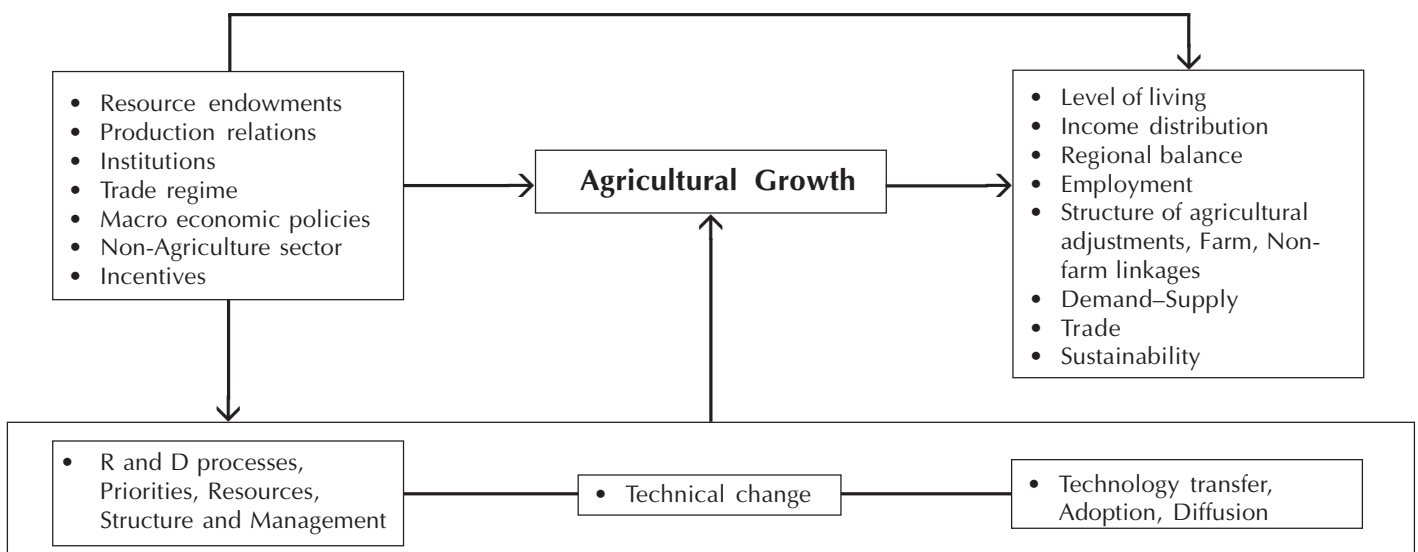


#### Conceptualizing Research at NCAP

Keeping in view the expectations of ICAR and the mandate of NCAP, the research activities of the Centre is conceptualized as below:

It can be seen that NCAP is pursuing policy-oriented research centered around technical change for accelerated agricultural growth and rural prosperity. This imparts a unique character

#### CONCEPTUALIZING RESEARCH AT NCAP

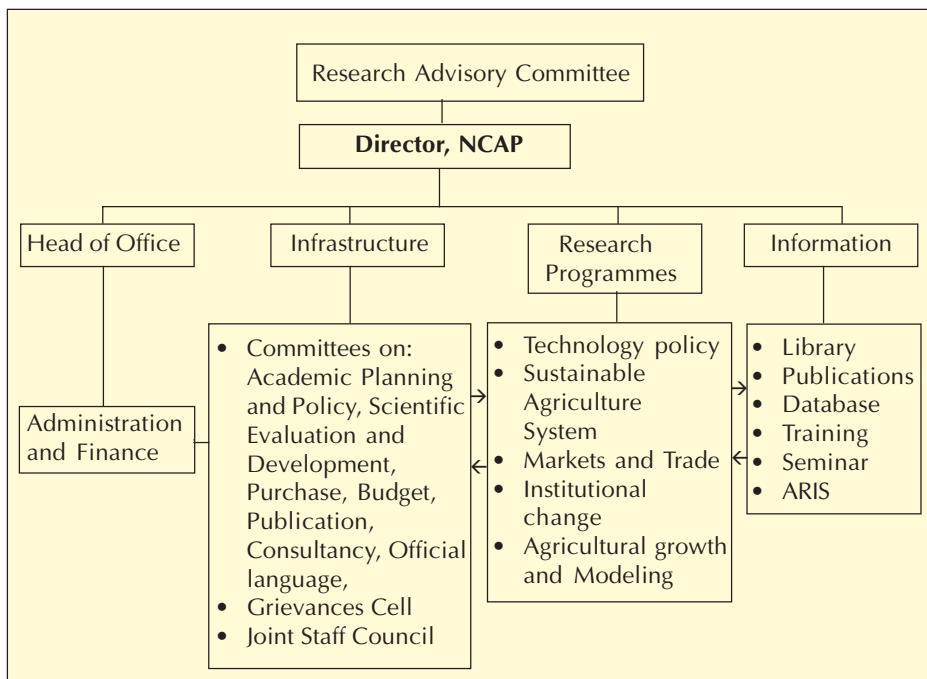


## Profile

to NCAP among the family of social science research institutions in the country and a core position in the overall mandate of the Council.

### ORGANIZATION

Research of the Centre is guided by a high power Research Advisory



Committee. Management Committee supervises its administration and finance. The Centre's activities are directed and administered by its Director. The administrative structure is decentralized with activity-based approach.

### RESEARCH

Research activities are grouped under five major theme areas, namely:

#### Technology policy

Agricultural R and D policies, decision support system for research priority setting and impact assessment, agricultural diversification, role of technology in meeting challenges of poverty, sustainability and globalisation of agriculture.

#### Sustainable agriculture systems

Alternate development pathways in crops, cropping systems, agricultural typologies, farming systems, nutrient management by ecosystem, sustainability status, trends and dimensions in natural resources management adaptations to climate change etc.

#### Markets and trade

Trade prospects and competitiveness of Indian Agriculture in post WTO period, Government intervention in foodgrain market in the new context, demand and supply projections for agricultural products, problems and issues in marketing of perishable products analysis of marketing institutions etc.

#### Institutional change

Tenancy reforms, linkages in seed industry, institutional reforms in irrigation, public-private partnership in research and extension, role of NGOs evaluation of self-help groups in credit delivery.

#### Agricultural growth and modeling

Sector, region and commodity out-

look, socio-economic dynamics and growth pattern, diversification and sustainability aspects, supply response in various sectors through agricultural modeling; sources of growth in Indian Agriculture.

### Achievements

The Centre is striving to fulfil the expectations of its sponsors by credible academic research, serious efforts in dissemination and advocacy of its research output, and supportive role to the other related institutions of the National Agricultural Research System (NARS). In the short span of its existence, the Centre has created a niche for itself in the NARS. The Centre is well known for its researches in the area of agricultural research resource allocation, agricultural research prioritization, impact of WTO and trade liberalization on Indian agriculture, public-private sector partnership in agricultural research, new policies and approaches in agricultural extension etc. It has also organized in a manner that right environment for high quality and relevant research is created, responsibilities are shared and, proper accountability is ensured. A brief account of the major contributions by themes of research is presented here. The achievements also include contributions under National Professor Project on Resource Allocation for Agricultural Research being operated at the Centre and completed National Fellow Project on Impact and Interaction of Technology, Infrastructure and Policy Variables on Agricultural Development in various Agro-climatic Situations in India.

#### Technology Policy

Major contributions under this theme include; status and directions on resource allocation, returns to research investments, research prioritization, research productivity, and public-private sector partnership in agricultural research. Centre's research showed that presently India is spending 0.48% and 0.20% of agricultural GDP on research (excluding education) and agri-

## Profile

cultural extension, respectively. Studies on agricultural research manpower have indicated an urgent need to step up the planned recruitment of scientists, keeping in view the slow growth in recruitment in the previous decades and the high levels of attrition in the current decade. An evaluation of agricultural research investment showed internal rate of return ranging from 45 to 109% for various research projects thus justifying the case for more allocation of resources for agricultural research. The socio-economic impact of reduction in real prices of foodgrains over the years, effect of technologies to break the boundaries of season and geographic location, contributions to reduce the losses from pests and diseases etc. have been studied, documented and widely used by the policy makers. The growth analysis of livestock sector showed that the contribution of total factor productivity to total output growth was 45% which indicates the viability of research investment on research and technology generation in this sub-sector.

Multiplicity of research needs, combined with accumulation of research findings in research institutions not finding favour with farmers are forcing public sector research units to refocus their research priorities. Analysis of research resource allocation indicated that 26% of research resources should go to cereals, 23% to livestock, 13% to the fruits and vegetables and 10% to oilseeds. The Centre has also identified agricultural research priorities for the South Asian region. The Centre has championed the efforts towards institutionalization of research prioritization, monitoring and impact assessment in NARS under National Agricultural Technology Project (NATP) project. Under the project, NCAP has organized 2 training programs, 1 international workshop, 11 national workshops, and 12 regional workshops involving sensitization-cum-training of more than 1400 research managers, and PME practitioners. The Centre is assessing

the early impact of 60 projects funded under NATP. It is also coordinating and guiding 25 PME cells constituted under NATP and located in 13 State Agricultural Universities and 12 ICAR Institutions. It has also developed guidelines for screening and prioritization projects under competitive grant program of NATP.

Institutional efficiency is critical for raising research productivity. In a study of efficiency in research institutes, the mean level of efficiency was estimated to be 55%. Enhancing the level of research contingencies improved the efficiency of research institutes. Public-private sector partnership will also improve efficiency besides increasing research intensity and accelerating technology dissemination process in research institutes. The Centre has played a leading role to flag issues, sort out modalities and develop guidelines to institutionalize public-private interface at all levels in ICAR system.

### Sustainable Agriculture Systems

Keeping in view the mounting stress and strain on natural resources, NCAP strongly feels that the social science group within NARS must address the economic and social dimensions of health of our natural resources, causes of their degradation and technological and policy options available to counter these. The major research efforts of the Centre under this theme include: study of total factor productivity in the Indo-Gangetic states, input use efficiency, organic agriculture, status and



Concerted efforts have been made by the Centre to study total factor productivity in the Indo-Gangetic states

prospectus of minor irrigation and watershed program etc. An analysis of total factor productivity of rice-wheat based cropping systems in the states located in Indo-Gangetic Plain revealed that annual growth in total factor productivity had declined drastically during 1990s and output growth was entirely driven by higher level of inputs. Analysis of long-term fertilizer experiments revealed less and decelerating wheat and rice yield response to chemical fertilizer application when compared to combinations of fertilizers with organic sources of nutrients. Inclusion of legume area revealed significant and positive impact on total factor productivity. Delayed planting of wheat required huge additional resources for even maintaining current level of productivity. The study on pesticide use in agriculture revealed sparse adoption of Integrated Pest Management in agriculture, suggesting redoubled efforts for promotion and popularization of IPM. Neglect of minor irrigation infrastructure aggravates inter-regional and inter-farm disparities. Therefore, institutional reforms relating to management of minor irrigation projects need to be accelerated and expanded. Performance of watershed programme was found to be best in zones: with an annual rainfall of 700-1000 mm, jointly implemented by the state and central governments, targeted in low and medium income regions and had effective people's participation.

### Markets and Trade

Since 1995, NCAP has richly contributed to the continuing policy debate on implications of WTO and trade liberalization on Indian agriculture. The impact of market access commitment on the Indian agricultural export was the first issue to be studied and it was found that, (i) there is an immense potential for many unconventional, high value farm products to become competitive in the global market and (ii) market access clauses *per se* do not



## Profile

ensure an automatic increase in the export of high value farm products unless real domestic issues concerning Indian agriculture like imperfections in the domestic market, lack of quality etc. are addressed. The next study on impact of import liberalization on Indian agriculture indicated that, (i) WTO rules seem to favour developed countries, (ii) impact on Indian agriculture depends on how developed countries reduce support to agriculture in their countries, (iii) the impact of variations in world prices on Indian prices would depend on our policies to check dumping when there is glut in the global market and speculative buying when there are shortage, and (iv) import liberalization would throw formidable challenge to compete with international technologies. Recent studies on this topic have clearly shown that international prices are highly volatile and if transmitted to domestic market would cause, uncertainty in agricultural incomes. Indian farmers being poor cannot adjust the cropping pattern to such volatility. Since, under WTO obligations such shocks cannot be checked through quantitative restrictions, there is need to evolve variable tariff structure and monitor it closely. The study on agricultural trade showed the strength of India on export of basmati-rice, fine rice, tobacco, tea, spices, condiments, oil cakes, processed fruit, processed vegetables, fresh fruits, fresh vegetables and floriculture.

The studies on demand for food have shown that there will be sharp

NCAP's study on agricultural trade has shown India's strength in export of major essential items



increase in the demand for milk, milk products, meat, egg, fish, vegetables, fruits and nuts and this is particularly so in rural areas. Results from the study on Government intervention in foodgrain market in the new context showed, that a bufferstock of around 17 million tonnes would be adequate to meet supply shortfalls in most of the years. Food Corporation of India should be retained, it should plan operations to keep a check on private trade, it's efficiency to be improved by modernization of its operations on scientific lines and by imparting professionalism to its management. The research on agro-processing reveals that the agro-processing units are mainly concentrated in the states where infrastructure is better rather than the supply of raw materials.

### Institutional change

The paradigms which governed institutional development and agricultural transformation have undergone a sea change in recent years. Serious empirical studies on this paradigm shift are needed. For instance, during the last two decades or so, there is increasing participation of private seed companies in the Indian Seed Sector. This trend was largely influenced by enactment of the new Seed Policy in 1988 and policy of open access to the public germplasm, varieties and hybrids. Keeping these major institutional changes in view, the Centre has taken up and completed some seed industry studies. They have shown that enabling policy environment and business and scientific opportunities have encouraged research partnerships and institutional innovations. There is increasing participation of the private sector in the development, multiplication and distribution of improved seeds. There is increased access of farmers to quality seed. There is however imperfection in the commercial seed market. The private sector has no incentive to promote new varieties of self-pollinated crops and there is little



Business and scientific opportunities have encouraged research partnerships and institutional innovations

flow of information about the system, characteristics and quality of seed to farmers. Fellow farmer is still the main source of seed of new variety and information. Institutional and policy options to address these weaknesses of the seed market, accessing global technologies, increasing cost-effectiveness of R&D, promoting research partnerships, and protecting consumer farmers are spelt out. It is suggested that further liberalization of the seed system should be accompanied by credible and effective mechanisms to regulate seed system and protect consumer farmers.

The studies on reforms in irrigation sector suggest restoration of the management of the irrigation systems to the users and their organizations.

The studies on equity impacts of water for agriculture covering both temporal and spatial dimensions indicated wide inter-state variation in the level of inequity in the current distribution of flow and lift irrigated area across different farm size classifications. The study suggests spatially differentiated strategies by states and irrigation sources to specifically target for equitable distribution of irrigation benefits. Maintaining the physical infrastructure of the irrigation systems, promoting financial sustainability of irrigation system operations, rehabilitating and restoring the status of tanks as a source of irrigation and recharging groundwater in the dryland and drought prone regions through watershed based con-

## Profile

servation programmes are suggested to promote overall equity.

The ongoing studies at the centre on the application of the National Systems of Innovation framework in agricultural sector has given new insights on the institutional underpinning of the agricultural innovation system, the NSI framework is highlighting that capacity building in NAROs as conventionally conceived, is failing to address wider system constraints. The central message is that while individual organizations need to redefine their roles and build skills accordingly, this needs to take place in the context of improving the capacity of the system as a whole. The focus of the findings is the emergence of new patterns of partnership between public sector research organizations and private sector, non-governmental agencies, farmer's association etc, and the opportunities this might provide for institutional arrangements that support pro-poor technology development and promotion. The research suggests that institutional roles outside the public sector are changing and this is offering new ways of developing and promoting technology. Partnerships between public and private sectors are emerging slowly and if such approaches are to be promoted institutional learning and experimentation needs to be adopted as part of wider public sector reform process.

Many private sector organizations provide extension services in India. But their presence is highly skewed towards well-endowed regions. Under these circumstances, to examine the scope and limits to privatize farm extension services in India, NCAP took studies in this area. The results have shown that in terms of the expenditure, manpower and field contact these organizations vary widely. A good number of farmers (about 50%) are willing to pay for quality extension services especially in the area of plant protection advice and training programmes. The demand for paid extension ser-

vices is high among farmers growing non-foodgrain crops and those having higher agricultural income per unit area. Considerable scope exists for initiating paid services. Public sector could either commercialize some of its services, if it could initiate quality services or set the environment for more active private sector participation in the provision of extension services.

### **Agricultural growth and modeling**

Agricultural growth pathway is defined by the interaction of technology policies, incentive structure, investments, and resource endowments. Understanding these forces, their pattern and determinants is essential for agricultural planning. Agricultural modeling emphasizing a longer term perspective is needed. This theme area of the Centre in fact will provide the final policy product emanating from distillations from the studies in other theme areas. The Centre has to strive hard to further strengthen this theme area in the coming years. However, few achievements in this area are provided here. An analysis of district-wise time series data on various agro-climatic, technological and infrastructure variables for the period 1970-1995 indicated the need for zone specific priorities for investment in agriculture for higher pay off. In zones, which show unutilized productivity potentials, roads, irrigation and education emerged as priority areas. A time series analysis of state wise data for the study of investment opportunities indicated the need for zone specific priorities for higher pay off. To achieve target growth rate in the Tenth Plan, the investment in agriculture should grow at an annual rate of 7.91% as compared to the present level of 4.95%. The study on agricultural productivity and rural poverty indicated technological interventions and productivity growth to have a significant impact on poverty reduction. Accelerated development of non-farm employment opportunities would also be

necessary to contain poverty. There is a limit beyond which crop farming cannot bear the burden of growing labour force. Proper pricing of water resources is needed to put a check on indiscriminate and excessive use of irrigation water.

NCAP organized a seminar on prioritization of strategies for agricultural development in north-eastern India. Specific researchable issues were identified like *rabi* fallow and wasteland utilization, boro rice, breeding cold tolerant rice varieties, rainfed upland rice, short-duration HYV wheat for *rabi* season, rainwater (watershed) management, animal disease forecasting etc.

### **Policy outreach**

The outreach domain of research output of NCAP is not only India (Ministry of Agriculture, Ministry of Food, Planning Commission, State Governments etc.) but global as many international institutes may use the products from NCAP. The Centre maintains close linkages with several national and international organizations involved in agricultural research, development and policy. The Centre has research collaboration with 9 reputed international organizations CGIAR Centres, several national organizations, universities including NGOs and private sector. Collaborative projects, seminars, workshops, publications, participation in policy-making bodies and meetings are the often-used methods to improve the outreach of the Centre. The Centre has initiated five important streams of publications, namely policy papers, policy brief Prioritization and Monitoring Evaluation notes, working papers and research reports and these serve as the main conduit for its research findings. The publications of the Centre are rated high regarding their analytical depth, and policy prescriptions.

### **Information technology**

The Agricultural Research Information System (ARIS) cell is the nerve

## Profile

centre of the centre. Local Area Network is used to maximize resource sharing and sharing of large statistical software packages and data. New working mechanism enables in sharing and maximizing the utilization of information generated under various policy related projects and in agriculture research and development. It is equipped with a fast speed high efficiency web server of latest generation. All scientists at the centre are provided with free access to web technology and internet at their own desk. The NCAP website: [www\http\agrieconnet.nic.in](http://www.agrieconnet.nic.in) provides an excellent platform for networking with peers including those at SAUs and other ICAR institutes. ARIS cell is equipped with other peripherals like scanner, multimedia projector, CD ROM facilities. The scientists continuously interact among themselves through winpopup messaging facility.

### Social science networking

Social Science Capacity is considered to be weak in NARS. Hence, NCAP pioneered the concept of social scientists network in Indian NARS. The working has been successful in sensitizing the social scientists with important research issues and empower them to undertake studies and prepare/

train human resources to provide the needed inputs to the decision makers for policy making. Thus, isolated social science units at NARS are mainstreamed and getting a sense of direction through this effort.

The Centre has also been making significant contributions to curricula development in social science; capacity building in frontier research areas and database development. A website of agricultural economists has also been created ([http\agrieconet.nic.in](http://agrieconet.nic.in)) and is popular with agricultural economists.

### Looking ahead

A policy research based institution particularly in agriculture has to be forward looking and proactive to face emerging issues and anticipate future challenges. It has to be responsive to the dynamic situations and needs and be always working at the cutting edge level. NCAP looks forward for change with continuity. Some of the specific ideas while looking at the future are:

- High-level research with aggressive linkage with advanced policy research institutions in India and abroad.
- More studies in fragile and disadvantaged agro-ecosystems

- Equal emphasis to policy research, policy advocacy and capacity building
- Revitalize postgraduate programs in agricultural economics at SAUs
- Strengthen capacity in agricultural outlook
- Bring out an annual publication of agricultural outlook
- Organize an agricultural outlook seminar every year
- Organize seminars, workshops and training programs for interface, exposure and capacity building.

The Centre has made good beginning in the area of policy research. The research covered several issues of current importance and a few of them were unexplored before. Strong foundations have been laid for future growth. Though the research output of NCAP confirms the commitment of the Centre for quality output, the challenge is that the research output must move to international standards in the years to come.

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**Dr Mruthyunjaya**  
*Director*

*National Centre for Agricultural Economics  
and Policy Research (NCAP), Library  
Avenue, Pusa Campus, New Delhi 110 012*

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